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DISEASES CAUSED BY BACTERIA AND FUNGI.

HARTMANN, G. (1936). Ein Beitrag zur Reinzüchtung von Mastitisstreptokokken aus verunreinigtem Material. **[Isolation in Pure Culture of Mastitis Streptococcus from Contaminated Material]**.—*Milchw. Forsch.* **18.** 116-122. 1 table. [10 refs.]

H. found that a broth medium, containing 0·05% of sodium-azide, inhibited saprophytic organisms in milk, and at the same time did not interfere with the growth of mastitis streptococci.—S. J. EDWARDS.

I. ROSELL, J. M. (1936). **Practical Methods of Testing for Mastitis.**—*Amer. J. publ. Hlth.* **26.** 872-879. [Numerous refs.]

II. PLASTRIDGE, W. N., ANDERSON, E. O., WEIRETHER, F. J., & JOHNSON, R. E. (1936). **Infectious Bovine Mastitis. Report of a Control Program based on Segregation of Infected Animals.**—*J. Dairy Sci.* **19.** 641-650. 4 tables. [Numerous refs.]

III. MILLER, W. T. (1936). **The Incidence and Types of Streptococci in First-Calf Heifers at Parturition.**—*Cornell Vet.* **26.** 241-248. 2 tables. [6 refs.]

IV. UDALL, D. H. (1936). **How Mastitis has been Controlled in New York State Dairy Herds.**—*Ibid.* 324-330.

I. R. reviews the various methods used for the diagnosis of mastitis and concludes that clinical examination, although valuable if properly made, is inadequate, and should be supplemented by biological and chemical methods, and, if possible, by bacteriological methods. He finds that the combined use of several of the biochemical methods, *e.g.* the catalase test, chloride test and reaction test, will detect most cases of mastitis, although any one method is insufficient.

II. The authors conclude, from observations on seven herds over a period of one to six years that, while the spread of streptococcus mastitis may be materially reduced by the segregation of infected animals at one end of the shed, and milking them last, complete separation is necessary to prevent entirely the spread of infection. The results support the view that it is possible to establish and maintain a herd free from *Str. agalactiae*, either by segregation of normal animals and replacement of infected ones, or by forming a new herd of first-calf heifers.

III. Samples of colostrum were collected immediately after parturition from each quarter of 100 first-calf heifers in a herd which was heavily infected with chronic streptococcus mastitis, and were examined by several cultural methods. Streptococci were found in samples from 27 animals. In the case of 20 of these,

a second sample was obtained and in 12 no streptococci could then be demonstrated. The behaviour of the strains in test media commonly employed for mastitis streptococci showed that they fell into numerous groups, many resembling streptococci of the skin or litter, which were therefore looked on as contaminants. *Str. agalactiae* was found in three animals at the first examination.

IV. U. lays stress on the value of clinical examination of the udder and states that, in New York State, mastitis has been controlled in many herds and diminished in others by the institution of clinical examination and of subsequent measures to prevent spread, including the disinfection of teats with chlorine solution. As part of the cattle reduction programme of the federal government, indemnities have been paid for cows condemned on account of advanced chronic mastitis.—A. W. Stableforth.

I. Groulade, P. (1936). Les vaccins lanolinés dans le traitement et la prophylaxie des mammites. [**Lanolin Vaccines in the Treatment and Prophylaxis of Mastitis**].—*Rev. Path. comp.* **36.** 1045-1052.

II. Plastridge, W. N., & Anderson, E. O. (1936). **Detection of Shedders of Streptococci Responsible for Infectious Bovine Mastitis.**—*Amer. J. publ. Hlth.* **26.** 711-715. 1 fig., 3 tables. [8 refs.]

I. G. describes 12 cases treated with a mixed vaccine containing streptococci, *Bact. coli* and staphylococci emulsified in concentrated streptococcal anatoxin and then mixed with 25 parts of lanolin in 100 parts of olive oil. Frequent stripping and massage of the udder were also undertaken. A clinically normal udder and milk yield were regained in 11 cases. One unvaccinated case resulting in a dry quarter is also described. No bacteriological examinations were made and in no case is the type of mastitis stated.

II. P. and A. examined 970 individual quarter samples of milk from cows in 15 herds, by physical appearance, reaction to brom-thymol blue, leucocyte count, sediment volume, types of colonies on blood agar plates and types of growth in incubated portions of the samples.

If streptococci were present in the cultures, tests were made as follows :– haemolytic action on cows' blood agar, litmus milk reaction, hydrolytic action on sodium hippurate, reducing action on methylene blue and fermentative action on lactose, mannitol, insulin, raffinose, arabinose and salicin. P. and A. conclude that such tests, following the isolation of streptococci from incubated portions of milk samples, constitute the best means of diagnosis of streptococcal mastitis. They show in a table how by means of these tests they differentiated the common types of streptococci which may be found in milk.—C. V. Watkins.

de Benedetti, M. (1936). Ricerche sul potere fibrinolitico di streptococchi isolati da focolai morbosi di uomo e di animali domestici. [**The Fibrinolytic Activity of Streptococci from Man and Domestic Animals**].—*G. Batt. Immun.* **16.** 106-112. [10 refs.] [English, French and German summaries].

Fibrinolytic activity is lacking in strains of streptococci of animal origin, but the property is present with comparative frequency in strains from human morbid sources.

This property is of assistance in judging the pathogenic nature of a given streptococcic strain, particularly of human origin, but it is not absolute, being liable to fail in some cases.—N. Bisset.

I. Pilot, I., Buck, Catherine, Davis, D. J., & Eastman, D. A. (1936). **Tonsillitis in Dogs Due to Hemolytic Streptococci.**—*Proc. Soc. exp. Biol., N.Y.* **34.** 499-502. [3 refs.]

II. Neter, E., & Witebsky, E. (1936). **Fibrinolytic Activity of Hemolytic Streptococci and Other Microörganisms.**—*Ibid.* 549-552. 2 tables. [3 refs.]

III. Foote, F. M., Welch, H., West, D. Evelyn, & Borman, E. K. (1936). **Incidence and Significance of Beta Hemolytic Streptococci in Cultures from a Selected Group of Milk Handlers.**—*Amer. J. publ. Hlth.* **26.** 799-806. [10 refs.]

IV. Kodama, T. (1936). **Studies on the Toxic Fractions of Hemolytic Streptococci. II. The Classification of Hemolytic Streptococci and the Specific Toxigenic Properties of Group "A" Streptococci.**—*Kitasato Arch.* **13.** 217-229. 6 tables. [12 refs.] [In English].

I. Haemolytic streptococci were isolated from the tonsils of 12 out of 13 normal dogs and from 9 out of 14 affected with tonsillitis, being predominant or in pure culture in the latter. They were also isolated from the lungs of two dogs which died after showing symptoms which were probably secondary to distemper. Acute tonsillitis was produced in certain dogs by swabbing the tonsils with a culture from the lung of one of the dogs which died.

Twenty-two canine strains were further examined. None were mucoid, all were strongly haemolytic but not fibrinolytic ; 11 split sod. hippurate, 13 fermented trehalose and one sorbitol. [The biochemical data given are unfortunately not sufficient to show the nature of the strains ; they apparently included more than one species. No serological data are given].

II. N. and W. find that fibrinolysin may be produced by various species other than haemolytic streptococci, *viz*, green-producing streptococci, enterococci, pneumococci, *Bact. coli*, *Bact. aerogenes*, *Pseudomonas pyocyanea* and *Proteus vulgaris*, when grown in 2% glucose broth. Whilst, however, fibrinolysin was also produced by haemolytic streptococci in 0·05% of glucose broth, it was not produced by one strain of green-producing streptococci or one of enterococci tested at this concentration. Data on the effect of using other carbohydrates are also given.

III. Swabs from the throat and from the nose were obtained from a group of 85 milk handlers at weekly intervals over a period of three months and examined for β haemolytic streptococci. One pair of swabs was cultured within about one hour, the other pair was mailed to the state laboratory where cultures were made about 18 hours later. All swabs were streaked on the surface of sheep blood agar ; other media were, however, used. Sheep blood gave results similar to those of rabbit blood agar, whilst the use of Löfler's blood serum slants or enrichment in glucose broth gave results of much less value.

Transport by post resulted in a reduction of the positive findings by about 50%. Twenty (23·5%) of the 85 milk handlers gave positive cultures at least once during the three months period of study. Five of these were persistently positive. Between 8% and 9% of all pairs of throat and nose swabs were positive when plated " at once ". The strains isolated (77 in all) were indistinguishable serologically and biochemically from strains of known pathogenicity for man ; all belonged to Group A of Lancefield's group classification.

The authors conclude that the usual routine culture of mailed swabs at monthly intervals is inadequate and that, in any case, the percentage of carriers is too large to make such a method of controlling carriers practicable. They emphasize the fact that outbreaks of milk-borne streptococcus infection occur only when a comparatively large inoculum reaches the milk as a result of actual infection of the udder of the cow.

IV. K. examined 62 previously classified strains of streptococci and 191 other strains from streptococcus infections or from normal carriers. He concludes that methods of grouping, which are based on the restriction of haemolysis in 1%

glucose blood agar (3 groups) and the degree of decolorization of Gram-stained preparations by alcohol containing picric acid respectively (2 groups), fall roughly into line with those obtained by Lancefield's group precipitin method.

[Since neither of these methods distinguishes Group A streptococci from those of all other groups, they would appear to be of little service in differentiating potentially dangerous haemolytic streptococci from others].

K. concludes, from a study of his strains, that the human throat is the main reservoir of Group A strains and that Groups A and G are present in normal throats, Groups B and C being regarded as secondary. Most streptococci from the non-infected genital tract of human beings are of Groups B or D. Most streptococci of human infections belong to Group A, which are alone specifically toxigenic for human beings. Serum extracts (WELD) of Groups A and G strains were toxic for mice.—A. W. STABLEFORTH.

I. JULIANELLE, L. A., & HARTMANN, A. F. (1936). **The Immunological Specificity of Staphylococci. IV. Cutaneous Reactions to the Type-Specific Carbohydrates.**—*J. exp. Med.* **64.** 149-159. 3 tables. [13 refs.] [See also *V. B.* **5.** 778].

II. O'MEARA, R. A. Q., & MACSWEEN, J. C. (1936). **The Failure of Staphylococcus to grow from Small Inocula in Routine Laboratory Media.**—*J. Path. Bact.* **43.** 373-384. 6 tables. [13 refs.]

I. This report is concerned with the skin reactions of infants, children and adults to the carbohydrates of the two types of staphylococcus previously distinguished by J. (with other workers), on the basis of precipitation tests with carbohydrate extracts and immune sera.

Cutaneous sensitivity to the carbohydrates of Type B is extremely rare or non-existent. Skin reactions to Type A carbohydrate occur in about 12% of normal infants and children and in from 65% to 70% of normal adults. They occur regularly in patients with staphylococcus infection. Demonstrable precipitins are not present in normal or in mild infections. They are present in cases of severe, prolonged, or generalized staphylococcus infection. Specific carbohydrates were not found in urine.

II. Numerous hypotheses have been formulated to account for the failures of many pathogenic organisms to grow from small inocula in routine media. It is shown here that, in the case of staphylococcus the failure may be due to the presence of copper, introduced in the peptone, which often contains considerable quantities or by the use of copper apparatus. Inhibitory concentrations of copper are only likely to be present after the medium has been heated and has stood for some time. The copper inhibition conforms in this respect and in others to the type of inhibition ordinarily met with in routine media, and to that described by WRIGHT and by DUBOS. It is suggested that the value of the Huntoon-Wright method of broth preparation depends upon the removal of copper which is absorbed by the meat. The iron which the peptone contains is also removed by this method.

Variation in copper and iron content is a major factor in the variation of commercial peptones and the authors stress the desirability of manufacturers giving, for each batch of peptone, figures for the salt content and nature and quantities of metals, as well as the method of preparation and figures for total and amino-nitrogen.—A. W. STABLEFORTH.

PLATT, A. E. (1936). **Investigations into the Nature of the Condition known as "Floating Yolk" in Eggs.**—*Aust. J. exp. Biol. med. Sci.* **14.** 107-116. 4 figs. [2 refs.]

A large percentage of fowls' eggs examined on the packing floors in Australia have recently shown an abnormality known as " floating yolk ". This is characterized by an excessive mobility of the yolk which usually rises to the top of the egg whatever way it is turned. When candled, the eggs also show the shadow of what appears to be an appendage to the yolk. When the eggs are broken this appendage is seen to be the thickened chalaza or suspensory ligament of the yolk. Otherwise the broken eggs often appear normal, but some show partial coagulation of the yolk and slight opacity of the white, especially in a zone around the yolk.

Histological sections revealed the presence of bacteria in the affected chalaza. Pure cultures were obtained and the organism was studied in detail. It is a rather large, spore-bearing, Gram-positive, aerobic bacillus. Irregularly lobulate colonies are produced on blood agar.

On *post-mortem* examination of birds which laid affected eggs, the same bacterium was isolated from the oviduct but not from the ovary. Three experiments were carried out on the reproduction of the condition. Fowls producing normal eggs were given cultures of the organism in their drinking water. In each case the fowls commenced to lay eggs with floating yolk from two days to three weeks later.

No definite conclusions are drawn, but the evidence so far obtained points to the organism isolated being the cause of the condition.—W. I. B. Beveridge.

Anon. (1936). **Report of the Special Committee on Tuberculosis [A.V.M.A.]**—*J. Amer. vet. med. Ass.* **89.** 455-456.

Further progress in TB. eradication is reported. Of nearly 23 million cattle tested in 1936, only 0·7% reacted. By June, 1936, there were 256,056 fully accredited herds containing 3,746,955 cattle in the country. The general incidence of bovine TB. is now less than 0·5%. The avian type of infection was frequently seen in cattle. It is the most common type of infection in swine.

Research on " skin lesions " and " no-visible lesions " in tuberculin-reacting cattle was continued.—J. E.

Stuchbery, H. M. (1935). **Tuberculosis in Swine.**—*Agric. J. Fiji.* **8.** 27-28.

The occurrence of tuberculosis on three different piggeries in Fiji is reported. It was assumed that infection was spread directly from one animal to another in each establishment, since no milk was given and only cooked meat was fed to the pigs. The double intradermal tuberculin test, used in cattle, was applied and there were 27 reactors out of 62 pigs. The method of application of the test and a description of the reactions are given.—C. R. Turbet.

Osterhage, K. H. (1936). Ueber experimentelle Hauttuberkulosen bei der Katze. [**Experimental Skin Tuberculosis in Cats**].—*Arch. Derm., Berl.* **173.** 317-335. 2 tables. [18 refs.]

Living tubercle bacilli, inoculated intradermally into young cats, produced a characteristically diffused inflammatory reaction of a purulent type. No definite abscess or tubercle formation was seen. Injection into the subcutis resulted in a circumscribed, nodular focus of infiltration. General metastasis from intradermal foci of infection was not noted. Apparently the skin of the cat shows a powerful affinity for tubercle bacilli, and a notable indifference to the toxic action of these organisms.—E. J. Pullinger.

I. Anon. (1936). **Pulmonary Tuberculosis Due to Bovine Tubercle Bacilli.**—*Amer J. publ. Hlth.* **26.** 1128-1129. [3 refs.]

II. Blacklock, J. W. S. (1936). **Tuberculosis in Infancy and Childhood: with Special Reference to its Prevention.**—*Brit. med. J.* Aug. 15th. 324-328. 5 tables. [Numerous refs.]

I. Attention is drawn to the commonly accepted assumption that the bovine type of tubercle bacillus does not cause primary pulmonary tuberculosis in human beings, in spite of the fact that many cases of primary pulmonary lesions due to the bovine type have been reported in Denmark, Holland and Great Britain. A study of the position in the United States is urged.

II. A survey of the incidence of tuberculosis in children, with special reference to the general incidence and mortality, and sex incidence. The nature and cause of primary pulmonary and primary alimentary tuberculosis are discussed. Of 166 cases of respiratory, 73 of abdominal, and 30 of cervical TB. (in children up to 13 years) investigated, 3·6, 82·2 and 63·3% respectively were due to bovine type infection.—E. J. Pullinger.

Hemmert-Halswick, G. (1935). Beitrag zur Kenntnis der kulturellen Merkmale der Tuberkelbakterien und der verwandten säurefesten Saprophyten. **[Cultural Characters of Tubercle Bacilli and Acid-Fast Saprophytes].**—*Inaug. Diss., Giessen.* pp. 40. 18 figs. [Numerous refs.]

A study of the growth of various types of *Mycobacterium* in a variety of modifications of Sauton's synthetic medium. In shake cultures human, bovine, avian and saprophytic types frequently show differences in respiratory requirements, as indicated by the formation of rings of growth at different depths below the surface of the medium. The microscopic appearances of young colonies of the various types of *Mycobacterium* grown on the surface of such medium are compared.—E. J. Pullinger.

Weissfeiler, J., & Morosowa, F. N. (1935). Schutzimpfungsversuche gegen Tuberkulose mit verschiedenen Varietäten des Tuberkuloseerregers und mit Staphylokokken. **[Immunization Experiments against Tuberculosis with Different Types of Tubercle Bacilli and with Staphylococci].**—*Beitr. Klin. Tuberk.* **86.** 358-370. 1 fig. [Numerous refs.]

W. and M. have compared the immunizing properties of BCG, of a pigmented strain of *Mycobact. tuberculosis* (isolated by W.), of " R " and " S " variants of this, of a non-acid-fast derivative of *M. tuberculosis* and of staphylococci. Groups of 8 to 14 guinea pigs were used.

The best results were obtained with BCG, whilst the pigmented strain and its " R " and " S " variants both produced considerable resistance. A non-specific increase of resistance also followed vaccination with staphylococci. The non-acid-fast tubercle bacilli had little effect.—A. W. Stableforth.

Stephens, E. H., & Gill, D. A. (1937). **Johne's Disease.**—*N.Z. J. Agric.* **54.** 1-7. 3 figs.

A description is given, followed by a discussion on the disease as it affects New Zealand cattle. It was introduced in imported cattle and is present in the Taranaki and Waikato districts. Therefore, all imported cattle require a negative johnin test. On known affected farms, a six-monthly johnin test is being applied to all cattle, with slaughter of reactors.—C. S. M. Hopkirk.

Sevčik, F. (1932). Umělá infekce koně bacilem ozhřivky vypěstěným z ozhřivé kozy. **[Artificial Infection of the Horse with *Bacillus mallei* Isolated from a Goat.**—*Zvěrolék. Rozprawy.* **6.** 35-53.

HARNACH, R. (1935). O prvních projevech alergie u koně uměle infikovaného malleem. [**The Reaction to the Mallein Test in a Horse Experimentally Infected with Glanders**].—*Ibid.* **9.** 145-153. [10 refs.] [French summary].

A goat was kept for a long time in a stable containing two horses affected with glanders from which they and the owner died. The goat was taken to the Veterinary School at Brno for observation.

Cultures of *Pfeifferella mallei* were isolated from the goat and used to infect a horse, which showed a general and local reaction after four weeks and then apparently recovered, but died 17 months later from typical glanders. The organism was isolated from the horse by g. pig passage. The culture showed certain differences from the usual *P. mallei* strains.

The above experimental horse was tested for glanders and gave positive reactions to skin and ophthalmic tests on the sixth day after inoculation, and agglutinins were present on the 19th day. Tests were also carried out with mallein prepared ten years previously from an infected goat, but no reaction was obtained; this may have been due to alteration through age or to its specific property. —E. PŘIBYL (BRNO).

KAIRIES, A., & SCHWARTZER, K. (1936). Studien zu einer bakteriellen Influenza der Mäuse und Beschreibung eines "Bacterium influenzae murium". [**Bacterial Influenza in Mice: "Bacterium influenzae murium"**].—*Zlb. Bakt. I.* (*Orig.*). **137.** 351-359. 6 figs. [Numerous refs.]

A description of a spontaneous disease amongst laboratory mice, and mice in breeding establishments. The symptoms included conjunctivitis, abscesses on the head, purulent nasal discharge and evidence of pneumonia. An organism was isolated in pure culture which resembled the genus *Haemophilus*. [The actual metabolic requirements as regards X and V factors were not ascertained]. Mice died rapidly when inoculated (subcut.) with cultures of this organism. During the course of the experimental disease the leucocyte count of mice dropped markedly. [The evidence presented does not satisfactorily exclude the possibility of the natural disease being caused by the joint action of a filtrable virus and a haemophilus-like organism, as in swine influenza].—E. J. PULLINGER.

SCHLUTER, W. (1936). Beitrag zur serologischen Differenzierung hämoglobinophiler Bakterien. [**Serological Differentiation of Haemoglobinophilic Bacteria**].—*Zlb. Bakt. I.* (*Orig.*). **136.** 362-370. 3 tables. [7 refs.]

Haemophilus influenzae suis, *H. influenzae* (human strain) and *H. pertussis* have been compared by serological methods. Whilst strains reacted with their homologous antisera to fix complement, they showed no complement-fixation with heterologous antisera. A strain of *Haemophilus* isolated from geese which suffered from respiratory disorder failed to react specifically with any of the other three immune sera. After absorption of *H. influenzae* (human strain) immune serum with the homologous organism, all specific antibodies were removed, whereas absorption with the porcine, goose and whooping-cough strains failed to remove all antibodies. These experiments reveal that essential antigenic differences exist between various species of *Haemophilus*.—E. J. PULLINGER.

I. GRAHAM, R., & HARRIS, Barbara. (1936). **Studies on So-called Cornstalk Disease in Horses. IV. Toxic Encephalitis or Non-Virus Encephalitis.**—*Vet. Med.* **31.** 340-346. 6 figs. [16 refs.] [French and German summaries]. [This is not one of a progressive series of papers, but just one of seven published in various periodicals].

II. Graham, R. (1936). **A Note on the Influence of Culture Media on the Isolation of Pasteurella from Equine Cerebral Tissues of Artificially Inoculated Horses.**—*J. Amer. vet. med. Ass.* **89.** 59-64. 1 fig., 1 table. [8 refs.]

III. Anon. (1936). **Studies in So-Called Equine Cornstalk Disease. (Toxic Encephalitis or Non-Virus Encephalomyelitis).**—*Anim. Path. Exch. Univ. Ill.* pp. 4. 1 graph, 1 chart.

I. An outbreak of so-called " cornstalk " disease in horses in Illinois State, U.S.A., in 1934-1935 provided an opportunity for a further investigation of the aetiology of this condition. The first half of this article briefly reviews work previously carried out in this connexion, namely, the possible role of moulds, viruses, certain anaerobic organisms and climatic conditions in causation. [*V. B.* **6.** 161 and 311]. The second part reports the detection of organisms of the pasteurella type in the brain tissue and heart blood of two naturally occurring cases of the disease. Direct cultural methods served for the isolation of these organisms from the heart blood but, with the brain tissue, passage through small laboratory animals proved necessary. Details are furnished of the inoculation experiments.

II. In attempts at the direct isolation of the pasteurella type organisms from brain tissue of naturally occurring cases, G. employed plain agar, 10% horse blood agar and gentian violet agar as solid media and 10% maize meal, brain and meat as liquid media. Only the liquid media yielded positive results. The organisms so isolated were inoculated into three healthy horses and the results were fatal in all cases. In attempts to recover the organisms from the brains of these horses, liquid media alone proved of value.

III. This is a general report on work carried out in connexion with the same outbreak of disease. It covers practically the same ground and conveys the same information as above [I]. There is a rather more detailed consideration of the meteorological conditions existing prior to the outbreak and their possible effect on causation. A record is also given of the symptoms exhibited by the affected animals and the preventive measures suggested.—C. Davenport.

Boecker, E. (1936). Die praktische Diagnostik der Bazillen der Typhus-Paratyphus-Enteritis-Gruppe. [**Diagnosis of Salmonella Infections**].—*Zlb. Bakt. I.* (*Orig.*). **137.** 321-347. 3 tables.

A résumé of the theoretical and practical identification of members of the *Salmonella* genus. No new information is recorded. B. includes the formulae of some of the less-known differential media such as bitter rhamnose, and explains the particular classificatory purposes for which such media are useful. The article concludes with the standard Kauffmann-White table of antigenic components, (omitting the confusion of more recently described antigenic factors), and a table of the more important fermentation reactions.—E. J. Pullinger.

I. Dimock, W. W., & Edwards, P. R. (1936). **The Differential Diagnosis of Equine Abortion with Special Reference to a hitherto Undescribed Form of Epizootic Abortion of Mares.**—*Cornell Vet.* **26.** 231-240. [4 refs.]

II. Fujimura, S., & Hoshi, T. (1936). **A Case of Infection with *Bact. abortus equi* in Man.**—*J. Jap. Soc. vet. Sci.* **15.** pp. 159-163 of Pt. I. [In Japanese : abst. from English summary pp. 28-29 of Pt. II]. 4 tables.

III. Henning, M. W. (1936). ***Salmonella onderstepoort*: A New Type of *Salmonella* from a Sheep.**—*J. Hyg., Camb.* **36.** 525-531. 3 tables. [19 refs.]

I. A brief description is given of abortion in mares, under four headings. *Salmonella abortus-equi* infection is acute ; infection is by ingestion and the

period of incubation varies from 14 to 28 days. In most cases the mare produces a normal foal the following year. Diagnosis may be confirmed by isolation of the organism from the foetus or uterine secretion, or by the agglutination test. Vaccination is recommended as a control measure.

Streptococcal abortion is diagnosed by the isolation of the organism from the foetus, and the portal of entry is probably the genital tract. Metritis and cervicitis follow infection and the infected mare does not become normal without treatment.

Virus or epizootic abortion is the name given to outbreaks from which no bacteria have been isolated, some evidence having been obtained of the existence of a virus. Small white degenerated areas in the liver constitute the characteristic lesion in the foetus and the abortion commonly occurs between the eighth and tenth month of pregnancy. Diagnosis is often effected by a process of elimination and the mare usually becomes normal quickly. The inoculation of pregnant g. pigs with filtrates of foetal fluid yielded promising but not conclusive results. Material from aborted foetuses was fed or injected both in the filtered and unfiltered state to pregnant mares and six of 22 aborted.

Abortions due to other causes include those of unknown aetiology, and probably some at least are due to nutritional disturbances and to injuries.

II. A veterinarian, who inserted his arm into the vagina of a mare which had aborted, developed fever, four furuncle-like boils on his arm and swelling of the axillary glands. The abortion was due to *S. abortus-equi* and both staphylococci and *S. abortus-equi* were isolated from the pus of the human lesions.

The English summary states that the serum of the patient exhibited a negative result with both strains of *S. abortus-equi* but, according to a table given in the text, agglutination occurred in low dilutions.

This is apparently the first recorded case of infection of a human being with this organism.

III. H. describes a new type of *Salmonella* isolated from a sheep at Onderstepoort. It is motile and ferments glucose, dulcite, sorbite, arabinose, xylose, rhamnose, maltose and mannite with the production of gas. It produces hydrogen sulphide, but does not form indole. It is diphasic and its " H " antigens correspond, in the non-specific group phase with *S. cholerae-suis* with an additional factor, and in the specific type phase with *S. reading*, *S. newport*, etc. The " O " somatic antigen is different from that of any other salmonella described. The antigenic structure given is as follows :–

" O " antigen		XIV (pending a final allotment by the sub-committee of the International Society for Microbiology).
" H " antigen	(Specific)	e.h.
,, ,,	(non-specific)	1.4.5. (+).

[Bridges and Dunbar—(1936). *J. R. Army med. Cps.* **67.** 289.—have also used the symbol XIV for a new type of *Salmonella* (*Bact. kirkee*) and it is unlikely that the two antigens have anything in common].—R. Lovell.

I. Schaaf, J. (1936). Die Salmonellose (infektiöse Enteritis, Paratyphose) des Geflügels, ihre Bedeutung und Bekämpfung. [**Salmonella Infection of Poultry**].—*Z. InfektKr. Haustiere.* **49.** 322-332. [Numerous refs.]

II. van Dorssen, C. A. (1936). Ueber subkutane und perorale Impfung bei Tiersalmonellosen. [**Subcutaneous and Peroral Inoculation against Animal Salmonella Infections**].—*Ibid.* **50.** 18-33. 3 tables. [10 refs.] [Also appeared in *Tijdschr. Diergeneesk.* **63.** 1217-1225].

III. VAN DORSSEN. (1936). Salmonella-Infektion bei Tauben in den Niederlanden. [**Salmonella Infection in Pigeons in Holland**].—*Arch. wiss. prakt. Tierheilk.* **70.** 340-350. 5 tables. [Numerous refs.]

I. The importance of salmonella infections of domestic birds is stressed. In addition to *S. pullorum* infection, which frequently occurs in epidemic form, chronic carriers of *S. enteritidis* and *S. anatum* have been recognized. Such carriers are a menace to public health owing to the danger of their causing food poisoning (ducks' eggs, goose meat, etc.). Control of the infections includes the identification and destruction of infected stock, the careful control of the poultry market, the adequate cooking of food, etc. A comprehensive bibliography is appended.

II. A study of the relative value of subcutaneous and peroral vaccination of mice against a number of salmonella infections. A satisfactory method of preparing vaccine was to wash off a 24-hour growth from agar, using normal saline, adding 0·2% of formol and incubating at 37°C. for 24 hours. This avoids, as far as is possible, any serious damage to antigenic structure during the killing process.

Taking results of vaccination as a whole, oral administration compared unfavourably with subcutaneous inoculation. The experiments also showed that, whatever method of vaccination was adopted, the procedure was unsuitable for application to veterinary preventive medicine. Even very satisfactory vaccines, which protected most animals from clinical disease when subsequently exposed to infection, failed to prevent the establishment of a large proportion of chronic carriers of infection.

III. Naturally occurring infections of pigeons with *Salmonella* are common in Holland, *S. typhi-murium* and *S. enteritidis* var. *Dublin* being the species usually responsible. Whilst infected birds usually show a reasonably high specific antibody titre, at least 500 naturally infected and a similar number of experimentally infected birds were encountered which showed no specific antibodies, although salmonella were isolated by cultural examination. As serological tests evidently cannot be relied upon to pick out all chronic carrier birds, cultural examinations should be resorted to for this purpose. At the same time, any pigeon showing a specific agglutinin titre even as low as 1 : 10 should be suspected of being a carrier. For serological tests, alcoholized bacterial suspensions proved to be the best form of antigen, indicating that " O " antibodies are of greater significance in identifying latent infections.—E. J. PULLINGER.

I. FREI, W. (1936). Die neue Richtung in der Bekämpfung des Bangschen Abortus. [**Changes in the Control Scheme for Bovine Contagious Abortion in Switzerland**].—*Schweiz. Arch. Tierheilk.* **78.** 291-296.

II. ULBER, W. (1936). Wird die weisse Fleckniere des Kalbes durch Abortus-Bang-Bakterien hervorgerufen? [**The Connexion between** *Br. abortus* **Infection and Spotted Kidneys in Calves**].—*Tierärztl. Rdsch.* **42.** 546-548. [Numerous refs.]

I. F. deals with the provisions of the scheme brought forward in August, 1935, for the control of B. C. A. in Switzerland. The scheme is a voluntary one, though those availing themselves of its benefits are expected to follow its provisions for at least three years. It includes free blood testing, state help in the necessary replacement of infected animals and official recognition of abortion-free herds. Under the same orders, living or killed abortion vaccines may neither be used in the herds included in the scheme, nor in other herds, unless the percentage of infection is 70% or over. He discusses the control of the disease by sanitary measures based on the separation of reactors and non-reactors, the use of calving

boxes, tests before purchase and the rearing of disease-free young stock, etc., laying particular stress on the necessity of co-operation between the valley owners and those who own and let the alpine pastures for summer grazing.

II. U's report deals with the examination of 50 " white-spotted " kidneys from calves by various culture methods, and by the inoculation of two g. pigs with material from each kidney. Cultures were made on agar, glucose-agar, Conradi-Drigalski agar and on Stafseth liver agar or on veal agar, all plates being incubated in the presence of excess carbon-dioxide.

Br. abortus was obtained from four, and *Mycobact. tuberculosis* from two, in each case through g. pigs. Coliform organisms were found in eight cases by cultural methods. The remainder showed nothing beyond a few contaminants. In none were " food poisoning organisms " encountered.—A. W. Stableforth.

I. Schwarzmaier, E. (1936). Beitrag zur Unterscheidung der Brucellen auf Eiernährböden. [**The Differentiation of Brucella in Egg Media**].—*Z. InfektKr. Haustiere.* **49.** 309-321. 1 fig., 5 tables. [Numerous refs.]

II. Hansen, K., & Köster, H. (1936). Nachweis von Brucella abortus (Bang) auf Grund der Alkalifestigkeit. [**Demonstration of *Br. abortus* by Means of its Alkali Fastness**].—*Dtsch. tierärztl. Wschr.* **44.** 739-742.

I. Standard Petragnani's medium and Witte's haematin-containing modification were used for typing bovine, porcine and human strains of brucella. The value of incorporating or of omitting malachite green was also studied. Twenty bovine strains of *Br. abortus* isolated from cattle and 11 similar strains from human beings were examined. These were all previously typed by Huddleson's dye method. All strains but one failed to grow on Petragnani's or Witte's medium or else grew very slowly, whilst 17 strains of *Br. melitensis* grew readily and quickly. All genuine porcine strains of *Br. abortus* grew readily on the two types of medium in the absence of malachite green, but only grew very slowly if this dye was incorporated.

II. If films of *Br. abortus* are stained with alkaline methylene blue and are washed and counterstained with saffranin the bacilli stain blue against a pink background. Alternatively, if stained with alkaline saffranin, washed and decolorized with 0·05% H_2SO_4, and washed and counterstained with aqueous methylene blue, the bacilli stain red against a blue background.—E. J. Pullinger.

Gill, D. A. (1936). **Infectious Enterotoxaemia and the Clostridium welchii Group, with Special Reference to So-Called Pulpy Kidney in Lambs.**—*N.Z. J. Sci. Tech.* **18.** 106-119. 3 tables. [Numerous refs.]

A description of the general nature of enterotoxaemia in sheep due to *welchii* types, of the *welchii* group, and of the position in that group of *Cl. ovitoxicum*. Trials of vaccine and of antitoxin in lambs and sheep in Otago are described. G. found that he could not immunize lambs by single doses of vaccine, but that he could prevent pulpy kidney disease by inoculation of ewes with a formalinized culture before parturition.

A discussion of the epizootiology of pulpy kidney disease follows, the bearing of the food and state of health of the alimentary tract of the lamb being discussed.
—C. S. M. Hopkirk.

I. Frank, E. R., & Scott, J. P. (1936). **Two Cases of Infection Due to *Clostridium histolyticum* in the Horse.**—*Cornell Vet.* **26.** 252-257. 3 figs. [4 refs.]

II. Lesbouyries, & Berthelon. (1936). Observations sur l'entéro-toxémie des ovins. [**Observations on Enterotoxaemia in Sheep**].—*Bull. Acad. vét. Fr.* **9.** 262-267.

I. Two horses in Kansas, suffering from sitfasts, were later affected with large oedematous swellings over the shoulder, followed by extensive sloughing of the skin. One horse died. In both cases an organism was recovered which, by its morphology, cultural characteristics, and the nature of the lesions produced in the g. pig, was typed as *Cl. histolyticum*.

II. Enterotoxaemia has been established as a disease of sheep in seven departments in France. A description is given of the symptoms, and the lesions commonly found *post mortem*. In all cases it was possible to isolate *Cl. welchii*; sometimes this was Type A (Wilsdon) and sometimes it was Type D. The part played by nutrition as a predisposing factor is discussed, and a comparison is drawn between enterotoxaemia and grass tetany in the bovine. A formolized vaccine of *Cl. ovitoxicum* has given very satisfactory results.—H. H. Holman.

Walbum, L. E., & Reymann, G. C. (1936). **The Production of Toxin by *Bacillus oedematis maligni* (*Vibrion septique*).**—*J. Path. Bact.* **42.** 351-361. 11 tables, 2 charts. [12 refs.]

W. and R. investigated the most suitable conditions of growth for the production of toxin from this organism. Ordinary veal broth containing 1% peptone and 1% glucose at pH 7·6–7·8, with a liquid paraffin layer, is suitable for toxin production. The addition of coagulated meat is unnecessary. Ca carbonate should be added to neutralize acids as they are formed, although for it to be fully effective the medium should be constantly stirred [Walbum & Reymann. (1933). *V. B.* **3.** 681]. The largest quantity of toxin was found after 32 to 40 hours' cultivation at 37°C. When the medium is free from glucose the amount of toxin produced is small; it appears to be largest when 1% of glucose is present. The amount of peptone does not seem to be so important, although Riedel and Difco peptones were more satisfactory than Witte's. Growth in horse-liver broth and in whey containing 1% peptone was vigorous, but toxin production was poor. The stability of toxin was highest at pH 6·5. The optimum pH for the activity of the albumose splitting and the gelatin melting enzymes was pH 7·0.—D. L. Hughes.

Aitken, R. S., Barling, B., & Miles, A. A. (1936). **A Case of Botulism.**—*Lancet.* **231.** 781-784. 1 fig., 2 tables. [12 refs.]

A report of a case in a man due to consumption of meat pie. Mouse inoculation was used to demonstrate toxin in the pie. To isolate the organism cultures were made and those in which toxin was demonstrable were plated. Single colonies were subcultured and submitted to tests. The toxin was found to be Type B (this is the first account of this type producing botulism in this country). The strain isolated grew poorly, and it was feebly proteolytic and saccharolytic. Its growth under anaerobic conditions was greatly improved by the addition of 10% CO_2. This improvement was only found to occur with freshly isolated strains of the organism. Organisms of the salmonella group were not found.—D. L. Hughes.

van Saceghem, R. (1935). Sur la transformation de bactéries non pathogènes en bactéries pathogènes par culture dans le filtrat de bactéries pathogènes. [**Development of Pathogenicity by Non-Pathogenic Bacteria by Cultivation in Filtrate from Pathogenic Bacteria**].—*C. R. Soc. Biol. Paris.* **120.** 1379-1380. [2 refs.]

A non-virulent strain of *Bact. coli* is stated to have become pathogenic for goats when grown on the filtrate from a broth culture of a virulent strain of *Bact. coli*. No details are given.—A. Robertson.

I. Tscherniak, W. Z., Marayew, P. W., & Goussew, A. A. (1936). Observations sur les mycoses des mammifères. [**Mycoses of Mammals**].—*Rev. Path. comp.* **36.** 923-948. 10 figs. [Numerous refs.]

II. Catanei, A. (1936). Les caractères de la résistance acquise dans les mycoses. [**The Character of Acquired Immunity to Mycoses**].—*Bull. Soc. Path. exot.* **29.** 451-457. [Numerous refs.]

I. Mycoses or mould infections are usually considered to be rare in the lower mammals, but the authors consider that many cases may be missed because of inadequate examination. They also suggest that there is considerable variation in the geographical distribution of such infections, *i.e.* that they are not uncommon in Italy but rare in Germany. The authors have made histological studies of 17 cases occurring in the U.S.S.R. Of these, five were in pigs, affecting the stomach, four were in the lungs of horses and four in the lungs of rabbits. Four other cases were found in the lungs and pleura of a cow, in the kidneys of a rabbit, in the tonsils of a pig and, in the form of abdominal actinomycotic-like tumours, in a pig. There is evidence that infection may spread in the body *via* the blood stream.

II. In several different mycotic infections such as ringworm, epizootic lymphangitis of horses and sporotrichosis, C. has demonstrated a state of allergy by means of intradermal inoculations of cultures or extracts of cultures. He believes that the existence of this allergic condition explains the exacerbations which occur spontaneously after reinfection. In some mycotic infections there is resistance to further infection as long as the original infection persists.
—C. McG.

I. Balozet, L., & Pernot, P. (1936). Méningite du chien causée par un actinomyces. [**Meningitis in a Dog caused by an Actinomyces**].—*Bull. Acad. vét. Fr.* **9.** 168-177. 1 fig. [6 refs.]

II. Baldacci, E. (1936). La dénomination " Actinomyces bovis " Harz doit être supprimée comme " nomen dubium ". [*A. bovis* **Harz a Nomen Dubium**].—*Boll. Sez. ital. Soc. int. Microbiol.* **8.** 99-101. [18 refs.] [In French].

III. Baldacci, E. (1936). Histoire, synonimie et caractères culturaux de l' " Actinomyces sulphureus " Gasperini. [**History, Synonyms and Cultural Characters of** *A. sulphureus* **Gasperini**].—*Ibid.* 102-105. [4 refs.] [In French].

I. On *post-mortem* examination of an affected dog that had died of meningitis, the meninges were found to be very congested and the cerebral ventricular fluid excessive, cloudy and viscid. In stained films of the fluid, there were observed polymorphonuclear cells and fine granular filamentous bacteria which were gram-positive but not acid-fast. There were no granules nor colonies. An aerobic actinomyces, which grew well at 37° C., and more slowly at 20°C., was isolated. It was pathogenic for rabbits and g. pigs, causing small abscesses in the muscles and various organs. B. and P. suggest that this organism was a strain of *A. asteroides*.

II. B. examined a number of aerobic actinomyces isolated from actinomycotic lesions, and also studied the descriptions of similar organisms isolated by other workers. He has come to the conclusion that many different species are wrongly labelled " *Actinomyces bovis* Harz ". In his opinion the commonest aerobic actinomyces causing actinomycosis is the type described by Gasperini in 1896 and termed *A. sulphureus*. He proposes that this organism should be recognized as a distinct species, and that the name *A. bovis* should be discontinued.

III. B. gives a list of various names under which *A. sulphureus* Gasperini

has been described and reviews the morphological and cultural characters of the organism which would seem to belong to the aerobic acid-fast group. It grows at 18°C. and has been isolated from air as well as from animals and man.

[The name *A. bovis* is usually reserved for a micro-aerophilic, strictly parasitic organism, which grows only at 37°C., and which has been demonstrated by numerous workers to be the causal organism of true actinomycosis in cattle and swine. There is, at present, no justification for the discontinuance of the name]. —C. McG.

DISEASES CAUSED BY PROTOZOAN PARASITES.

Kubo, M. (1936). **Investigations on Amoebic Dysentery. IV. Experimental Studies of Amoebic Dysentery in Dogs. (Second Report). Amoebic Dysentery of Dogs in Chronic Stadium and the Significance of Dogs in the Spread of this Disease.**—*J. orient. Med.* **24.** 739-755. 5 figs. on 1 plate. [Numerous refs.] [Abst. from English summary pp. 47-48 of Pt. II]. [See also *V. B.* **6.** 19].

Eighty-five Mukden street dogs were examined. Seven were found to be harbouring *Entamoeba histolytica* and two were actually passing cysts. General observations of the intestines of experimentally infected dogs were carried out at periods of from 11 to 40 days of infection, which, for convenience, the author regarded as the chronic stage. The faecal condition varied in different infected individuals: some, of slight infection, passed apparently normal stools with small amounts of mucus containing amoebae, while others, heavily infected, discharged typical dysenteric stools with blood and mucus. Amoebae soon disappeared from the slightly infected, but remained for a long time in the heavily infected individuals. The erosion and ulcers revealed at *post-mortem* examination of acute infection were also seen in some chronic phases. Amoebae survived for some time in the lumen of the gut without invasion of its walls. The clinical symptoms in " chronic stages " appeared similar to those of man.—C. Horton-Smith.

I. Kolomietz, G. S. (1936). Ueber die verschiedenen Trypanosomenextrakte als Antigene bei Wa. R. der Dourine. [**Various Trypanosome Extracts as Antigens for the Complement-Fixation Test in Dourine**].—*Arch. wiss. prakt. Tierheilk.* **70.** 404-410. 2 tables.

II. Kelser, R. A. (1936). **A Complement-Fixation Test for Chagas' Disease employing an Artificial Culture Antigen.**—*Amer. J. trop. Med.* **16.** 405-415. [12 refs.]

I. A record of investigations into the value of various extractives for the preparation of antigens from dried trypanosomes for the complement-fixation reaction in dourine. The specific trypanosome antigen was extracted satisfactorily by methyl or ethyl alcohol, the former being better, but the addition of ether reduced the value of the extract as an antigen. Water to which phenol or formalin had been added, acetone, glycerol and chloroform all proved unsuitable for the extraction of the specific antigenic substance.

II. A description of the preparation of an extract of trypanosomes, derived from cultures of *Tryp. cruzi*, for use in the diagnosis of Chagas' disease by the complement-fixation test. As no method could be discovered of creating a heavy blood infection in experimental animals with this trypanosome, the antigen was prepared from cultures in nutrient agar to which 2·5% peptone and 0·7% sodium chloride were added to the stock medium, and 5% of a 1% solution of dextrose

and 5% of defibrinated g. pig blood were added immediately before inoculation. After growing for a week to ten days at a temperature between 24° and 30°C. the trypanosome growths were washed off with distilled water, separated from the fluid by centrifugation, washed with saline and finally preserved in twice the quantity of 50% glycerol in physiological saline, this stock antigen being diluted with 20 to 25 parts of saline and titrated before use. Over 400 serum specimens, some from known cases of Chagas' disease in man and animals, were tested with positive results in all known cases of the disease, and negative results where there was no evidence of infection. Two g. pigs infected with *Tryp. equiperdum* gave negative results to tests carried out with Chagas' disease antigen.—U. F. R.

I. Niebur, H. (1935). Untersuchungen über das Vorkommen von Trichomonas vaginalis bovis bei weiblichen Schlachtrindern am Schlachthof Hannover. [*Trich. vaginalis bovis* **in Cows Slaughtered at Hanover Abattoir**]. —*Inaug. Diss., Hanover.* pp. 48. 2 tables. [Numerous refs.]

II. Zürn. (1936). Die Bekämpfung des seuchenhaften Frühverkalbens (der Trichomonadenseuche). [**Control of Trichomonad Abortion in Cattle**].—*Dtsch. tierärztl. Wschr.* **44.** 419-422.

I. Of 515 mature female animals from north-west Germany, slaughtered at Hanover, only one showed pyometra associated with the presence of trichomonads. Of 500 similar animals from south-west Germany, also slaughtered at Hanover, 27 had pyometra and trichomonads were found in 15 of these.

II. Z. emphasizes the difficulties in diagnosing trichomonads in many cases, unless frequent examinations are made. He then gives a series of rules for controlling the disease, stressing the value of keeping accurate breeding data and of regular examinations.—A. W. Stableforth.

I. Küst. (1936). Die Diagnose der Trichomonadenseuche des Rindes. [**Diagnosis of Trichomonad Infection of Cattle**].—*Dtsch. tierärztl. Wschr.* **44.** 821-825.

II. Abelein. (1936). Die Bekämpfung der Trichomonadenseuche. [**Control of Trichomonad Infection**].—*Ibid.* 831-835. [1 ref.]

III. Schumann. (1936). Die Trichomonadenseuche bei Rindern. [**Trichomonad Infection in Cattle**].—*Ibid.* 860.

IV. Andrews, J., & Miller, F. W. (1936). **Non-Venereal Transmission of** *Trichomonas foetus* **Infection in Cattle.**—*Amer. J. Hyg.* **24.** 433-438. [15 refs.]

V. Das Gupta, B. M. (1936). **Some Observations on Vaginal** *Trichomonas* (*T. foetus*) **and the** *Trichomonas* **in the Digestive Tract of Cows in Culture.** —*Indian J. med. Res.* **24.** 541-544. 5 figs. [13 refs.]

VI. Blaschke. (1936). Frühabortus bei Rindern. Trichomonaden auch in den Sudetenländern als Ursache der Sterilität nachgewiesen. [**Trichomonads as the Cause of Abortion and Sterility of Cattle in Czechoslovakia**]. —*Prag. tierärztl. Arch.* **16.** 307-309.

VII. Staub, C. (1936). Trichomonas foetus und ihre Beziehungen zum seuchenhaften Frühabortus und zur Sterilität des Rindes. [**Relationship of** *Trich. foetus* **to Abortion and Sterility in Cattle**].—*Inaug. Diss., Zürich.* pp. 63. 16 tables. [Numerous refs.]

I. K. reviews the evidence as to the pathogenicity of *Trich. foetus*, and points out that pure trichomonad abortion has been recorded in women, and that similar organisms have been demonstrated in barren mares and sows. It has been accepted that transmission in cattle occurs at service, but virgin heifers are sometimes

infected and other methods of infection must exist. He reviews accounts of the clinical symptoms, but points out the difficulty in arriving at a definite diagnosis, and records that, by using a medium consisting of coagulated serum covered with buffered saline to which 1 : 10,000 acriflavine and a small quantity of rice starch have been added, he has been able to cultivate the parasites from contaminated material. He has been able to detect trichomonads by cultural methods in the blood and vaginal mucus of virgin heifers and in the blood of bulls in herds showing no evidence of disease. He suggests that the organism is a normal inhabitant of the intestinal tract, and that it only becomes pathogenic or is spread by service when an animal, owing to favourable disease conditions, develops an enormous trichomonad infection.

II. A. reiterates the measures of control which he had suggested previously [*V. B.* **5.** 122]. He claims to have had good results in the treatment of bulls by injecting 50 to 100 c.c. of 1 % acriflavine into the prepuce and urethra, the treatment being repeated after 8 to 10 days. He draws attention to the common occurrence of a coincident bacterial infection in cows which is much more difficult to cure than the trichomonad infection. He considers that *Trich. foetus* and *Trich. ruminantium* are separate species, and considers that the nature of the organisms detected by Küst in the blood of cattle requires further investigation. Other speakers at the meeting emphasized the certainty with which the diseased condition could be transmitted by the use of a diseased bull. Attention was also drawn to the existence of trichomonad infection in mares, donkey mares and sows, and to the isolation of similar organisms from the livers of cats exhibiting diarrhoea.

III. S. discusses the control of trichomonad infection of cattle in Silesia, where 54 farms have been found infected. The usual prohibition of all service for two months, the division of the cattle into healthy and infected herds, and treatment of the affected animals are recommended. S. suggests that the movement of cattle from the infected areas, except under a veterinary health certificate, should be prohibited.

IV. Four out of 34 heifers, moved into a herd infected with *Trich. foetus*, contracted a vaginal trichomonad infection whilst still virgin. All four animals showed some delay in breeding, and one of them failed to conceive after 17 services. The possibility of the infection having been conveyed by the instruments or the hands of the operator during examination is discounted, as all possible precautions were taken. It is suggested that contamination may have been due to tail switching or to lying on litter soiled with the urine of affected animals, but it is urged that the role of flies as vectors should be investigated in view of the claim that they act as transmitters of *Trich. hominis*.

V. Das Gupta compared cultures, from outbreaks of bovine abortion in America, with similar cultures of *Trich. ruminantium* derived from the caecum of a cow in England. Both organisms were grown in haemoglobin saline at a temperature of 37°C. The vaginal trichomonads are longer and more slender than the intestinal organisms, and possess a better developed undulating membrane. They do not ingest any solid particles, in contrast to the caecal organisms which ingest starch grains, bacteria, yeast cells, etc.

VI. Records the existence of trichomonad infection of the reproductive organs of cattle in Czechoslovakia. The infection was associated with persistent sterility and abortion, and was apparently spread by infected bulls.

VII. S. encountered sterility associated with abortion in the early stages of pregnancy on 42 premises in his practice in Switzerland and records detailed observations of the condition on 15 premises. He was able to demonstrate a trichomonad infection in 25 % of cases of complete abortion, in 33 % of cases of

endometritis and in 67 % of cases of pyometra. He was not able to detect trichomonads in the sexual tract of healthy cows, and concludes that *Trich. foetus* is not a normal inhabitant of the cow's vagina. S. considers that the organism has some relationship to the diseased condition, but his attempts to produce the condition experimentally, except in one case, only caused a fleeting trichomonad infection, and he is not convinced that the parasite is the definite causal agent. Whilst cases of abortion and sterility appeared to be definitely traceable to service by certain bulls, yet a bull might give bad results on his own farm and good results on a neighbouring farm, and the disease did not appear to be highly contagious. S. was unable to detect trichomonads in the bulls concerned. He recommends that bulls giving bad breeding results should be slaughtered, but criticizes Abelein's method of control [*V. B.* **5.** 122.] as unnecessarily severe, and claims to have had satisfactory results by vaginal irrigation with " chinosol " 1 : 1,000 in complete abortion, and by enucleation or loosening of the corpus luteum in endometritis and pyometra. He stresses that, after treatment, cows should not be served until the third period of oestrus.—U. F. Richardson.

Udinzeff, J. G. (1936). Ueber Kokzidienarten der Kaninchen. [**Rabbit Coccidia**].—*Z. InfektKr. Haustiere.* **50.** 71-74. [5 refs.]

A short historical account of investigations into rabbit coccidia precedes descriptions, which should prove of value in the diagnosis of the six species. Average dimensions etc. were obtained from the examination of 126 oocysts of *Eimeria stiedae*, 41 oocysts of *E. irresidua*, 81 oocysts of *E. magna*, 91 oocysts of *E. media*, 59 oocysts of *E. perforans*, and 115 (26 round and 89 oval) oocysts of *E. exigua*. —C. H.-S.

Yakimoff, W. L., Sokoloff, I. I., & Matschoulsky, S. N. (1936). Ueber die Kokzidien des Renntieres. [**Coccidia of the Reindeer**].—*Berl. tierärztl. Wschr.* **52.** 535-538. 1 fig., 5 tables. [1 ref.]

This article, dealing chiefly with *Eimeria* fauna of *Rangifer tarandus*, discusses *E. polaris* (Yakimoff and Solokoff, 1935) and what the authors consider to be new species, *E. mayeri*, *E. tarandina*, and *E. mühlensi*. The dimensions, geographical distribution, etc., are given for each species and a short note on *Isospora* spp. concludes the systematic sections of the paper. Diagnostic features are tabulated under shape, presence or absence of micropyle, dimensions of oocysts, [E. E. Jones —(1932). *Arch. Protistenk.* **76.** 130.—has shown that size alone is a valueless character for the identification of coccidian oocysts], shape and size of spores, and presence or absence of residual body and polar granules. [New species should be treated with caution until such time as further investigation confirms their verity. A knowledge of all phases of the life-history of an organism is desirable before unassailable new species are definitely established in faunal lists].—C. H.-S.

I. Rees, C. W., & Hale, M. W. (1936). **Morphological and Chemical Studies of the Blood of Cattle in Health and during Anaplasmosis.**—*J. agric. Res.* **53.** 477-492. 1 fig., 2 tables. [19 refs.]

II. Derflinger, E. R. (1936). **Anaplasmosis.**—*N. Amer. Vet.* **17.** No. 10. 24-26.

I. R. and H. review the results of other workers as to the blood constitution in normal cattle and in animals affected with anaplasmosis, and describe observations made on five bulls studied as normal animals six weeks before infection and, later, four as infected animals and one as a control. With the development of clinical anaplasmosis the red cell count dropped severely, in one case below 1,000,000 per c.mm., whilst the white cell count increased. The differential white cell count

showed a mild lymphopenia, a marked monocytosis, a marked eosinopenia and a left shift of the neutrophiles. The average haemoglobin, the oxygen content and the oxygen capacity showed distinct reductions, whilst the sugar, phosphorus, protein, Ca and urea content showed no significant alterations. The serum bilirubin increased until it became detectable by the van de Bergh direct method. These results are in general agreement with those of STEPHAN but do not agree with those of SERGENT. The morphological and chemical changes are interpreted as indicating a rapid destruction of red cells, but the nature of the agent causing the destruction was not determined. The destruction of red cells causes a severe drop in haemoglobin and in the oxygen-carrying capacity of the blood, to a point at which they become insufficient to maintain life.

II. D. records an outbreak of anaplasmosis in Oregon county, U.S.A., which was tentatively ascribed to the movement of carrier cattle from California. The whole affected herd was destroyed. BOYNTON is quoted as authority for stating that recovered animals may be carriers of infection for periods varying from five months to two years.—U. F. RICHARDSON.

BROWNLEE, A. (1936). **An Organism showing the Characters of the Genus *Sarcocystis* Present in the Central Nervous System of the Sheep.**—*J. comp. Path.* **49.** 263-267. 1 fig. [9 refs.]

Histological examination of the central nervous systems of 19 sheep, that had been inoculated intracerebrally with the virus of " louping ill ", revealed in ten cases sparse numbers of bodies resembling sarcocysts.

The bodies were oval in shape, averaging 66·9 × 46·1μ in size, with a double contour, and divided by septa into compartments packed with oval or sausage-shaped spores, averaging 10·3 × 3·8μ. No reaction in the surrounding tissue was apparent.

The affected sheep came from four different sources and had been on the institute pastures for over six months. The infection is thought to have occurred during this period and to be unassociated with the injection of the " louping ill " virus.—H. H. HOLMAN.

HEGNER, R. (1936). **Viability of Parasitic Protozoa after the Death of the Host.**—*Amer. J. Hyg.* **24.** 309-317. 2 tables. [6 refs.]

The survival of disease parasites after the death of their hosts is of extreme practical importance. The object of this investigation was to determine the period for which certain parasitic protozoa remained viable after their hosts had succumbed. Rats, g. pigs, frogs and birds, with their associated protozoan faunae, were examined. Trichomonads, after 24 hours in the caecum of a dead rat at a temperature of 37°C., survived and multiplied at room temperature for four days, and at 5°C. for 13 days. Balantidia from the caecum of a dead g. pig were viable for four days at both room temperature and at 5°C. *Plasmodium cathemerium* was infective after two days in the blood of a dead canary at a temperature of 5°C. *Trypanosoma lewisi* was infective after nine days at 5°C. within a dead rat. [It is significant that protozoa may survive for 20 days or more in the intestine of the cold-blooded frog, as this investigation shows].—C. HORTON-SMITH.

DISEASES CAUSED BY VIRUSES.

I. SCHMIDT, S. (1936). Immunisation du cobaye contre la fièvre aphteuse avec des vaccins polyvalents. [**Immunization of Guinea Pigs against Foot and**

Mouth Disease with Polyvalent Vaccines].—*C. R. Soc. Biol. Paris.* **122.** 971-974. [2 refs.]

II. Schmit-Jensen, H.-O., Schmidt, S., & Hansen, A. (1936). Sur l'effet de l'injection aux cobayes du virus aphteux en mélange avec l'émulsion d'huile de Frazer et Walsh. [**Effect on Guinea Pigs of the Injection of F. & M. Disease Virus in an Oil Emulsion**].—*Ibid.* 974-976. [2 refs.]

I. S. refers briefly to his previous work on the immunization of g. pigs with monovalent vaccines [*V. B.* **7.** 17]. Type O virus was found to produce a relatively poor immunity when given as a vaccine simultaneously with Types A and C. If aluminium hydroxide was added to the trivalent vaccine, g. pigs were found to be equally immunized to all three types.

II. A series of g. pigs was inoculated with different dilutions of virus in an oil emulsion. Typical lesions with generalization resulted in most cases. After the virus-oil mixture had been stored for seven weeks, it was found to have lost its pathogenicity and its antigenic properties, but appeared to render g. pigs hypersensitive to subsequent inoculation with active F. & M. disease virus. —E. C. Hulse.

I. Hansen, A., Schmidt, S., & Oerskov, J. (1936). Sur le sort du virus aphteux injecté dans le tissu sous-cutané du cobaye, dilué dans l'eau distillée, ou adsorbé par l'hydroxyde d'aluminium. [**The Fate of Foot and Mouth Disease Virus Injected subcutaneously after Dilution with Distilled Water or Adsorption by Aluminium Hydroxide**].—*C. R. Soc. Biol. Paris.* **123.** 717-720. [1 ref.]

II. Schmidt, S., Oerskov, J., & Hansen, A. (1936). Comparaison du pouvoir du complexe virus aphteux-hydroxyde d'aluminium inactivé, d'une part, *in vivo* et, d'autre part, *in vitro*. [**The Immunizing Power of F. and M. Disease Virus**].—*Ibid.* 721-724. 2 tables. [2 refs.]

I. G. pigs divided into two groups were inoculated (subcut.) with g. pig vesicle fluid (Type C virus) diluted with distilled water and with aluminium hydroxide respectively. The g. pigs were killed 2, 4, 6, 24 and 48 hours, and 3 days after injection ; emulsions from different tissues were tested for the presence of virus by g. pig inoculation. In the group receiving virus diluted with distilled water, virus was recovered from the site of inoculation after two hours. After 24 hours, virus was detected in the blood, liver, spleen and epidermis. In the group receiving virus adsorbed with $Al_2(OH)_6$, no virus was detected in the tissues of the g. pigs except in the spleen of one killed 24 hours after inoculation. The virus remained localized to the site of inoculation, where it became avirulent, although it retained its immunizing properties for a certain time.

II. It is shown that F. & M. disease virus, after treatment with $Al_2(OH)_6$, loses its pathogenicity rapidly on inoculation (subcut.) into g. pigs. It is capable of conferring an immunity for a certain period. When injected into a g. pig recovered from a recent attack of the disease, the virus is quickly inactivated, although its immunizing properties are not lost.

Virus treated with $Al_2(OH)_6$ does not lose the ability to produce an immunity after 24 hours' incubation at 37°C. in contact with convalescent immune serum. The $Al_2(OH)_6$ vaccine loses its virulence between the 24th and 48th hours ; after 14 days, however, the immunizing properties of the vaccine are not diminished. The same result is obtained if fresh g. pig serum is added to the vaccine.—E. C. H.

Pineteau, & Bourbon. (1936). Transmission de la fièvre aphteuse par un bovin guéri depuis plusieurs mois. [**Transmission of Foot and Mouth Disease by a Bovine Cured Several Months previously**].—*Rec. Méd. vét.* **112.** 159.

A heifer infected in April, is considered to have transmitted the infection to other in-contact cattle during the following August. No outbreak had occurred in the vicinity for several years and there appeared to be no other source of infection. The animal remained immune.—E. C. Hulse.

Šobra, K. (1935). Hodnocení krevních změn při infekčni anemií koni. [**The Blood Picture in Equine Infectious Anaemia**].—*Voj. zdravotn. Listy.* **11.** 32-39. [English and French summaries].

S. discusses the methods of blood examination in E.I.A. and the value of the findings in diagnosis. He concludes his remarks with the following summary :– the close connexion between the changes in the internal organs and those in the blood picture in E.I.A., which are due to a direct effect of the virus, makes it necessary to examine the blood changes in this disease.

Attention is called to the interpretation of the blood examination and to the significance of the latent forms in E.I.A. It is necessary to insist on a uniform technique for obtaining and examining the blood. The changes in the counts of the white blood corpuscles are more important than those of the erythrocytes. The blood findings in anaemias of other origin are fundamentally different from those in E.I.A.—E. Přibyl (Brno).

Fotheringham, W. (1936). **A Preliminary Note on the Occurrence of Inclusion-Like Bodies in Experimental and Natural Cases of African Horse-Sickness and the Probable Significance of their Presence in Relation to the Diagnosis of the Disease.**—*J. comp. Path.* **49.** 268-273. 4 figs. [14 refs.]

Material from ten horses artificially infected with horse-sickness, from two natural cases of the disease, and from two normal animals was subjected to a histological examination for " inclusion bodies ". Sections stained by Goodpasture's aniline-fuchsin and methylene blue method revealed changes in the parenchymatous cells of the liver and in the renal epithelium. They are described as follows :–

" They are spherical in outline and are surrounded by a distinct clear zone or halo. The size varies from quite small globules up to masses as large as a single liver cell. There may be only one . . . or several . . . in a cell and sometimes one gains the impression that the cytoplasm of a whole cell has become involved in the degenerative process, giving rise to larger globular hyaline masses ".

The fact that these changes were present in all cases of horse-sickness examined, and that they were absent in the two normal horses, suggests that they represent specific alterations associated with the activity of the virus.—R. E. G.

Covell, G., McGuire, J. P., Stephens, E. D., & Lahiri, B. N. (1936). **Notes on Antirabic Immunization.**—*Indian J. med. Res.* **24.** 373-388. 12 tables. [3 refs.]

An account of certain recent investigations into antirabic immunization in India.

The inoculation of monkeys with antirabic serum and live fixed virus in addition to 5% antirabic vaccine gave inconclusive results. Carbolized antirabic vaccine prepared from sheep cords is of much less value than that prepared from sheep brain. Incubation of the carbolized vaccine for 24 hours at 37°C. does not lessen its efficacy, and the vaccine may be stored for at least seven months.

The prophylactic treatment of dogs in India with fixed dog virus has not been successful ; great difficulty is experienced in preparing and maintaining a fixed dog virus, as the virus tends to become avirulent on passage. Also, apparently healthy animals may be carriers of the infection.—E. C. Hulse.

Kanazawa, K. (1936). Sur la culture *in vitro* du virus de la rage. [**Cultivation of Rabies Virus** *in vitro*].—*Jap. J. exp. Med.* **14.** 519-522. [9 refs.] [In French].

The centrifuged deposit of rabbit brain tissue infected with rabies was sown out into a suspension of embryonic rabbit brain tissue in Tyrode's solution. The cultures were incubated at 37°C. for four to five days, and subcultures were prepared up to the tenth passage. Dilutions of these cultures were inoculated intracerebrally into mice and rabbits, and typical symptoms of rabies were shown. Control cultures containing no rabbit embryonic tissue were avirulent after the second passage.—E. C. Hulse.

Travassos, J. (1936). Sur la pleuro-pneumonie infectieuse des chèvres. Comportement expérimental d'un virus isolé du système nerveux central. [**Nature of a Virus Isolated from the Central Nervous System of Goats Affected with an Infectious Pleuro-Pneumonia**].—*C. R. Soc. Biol. Paris.* **121.** 1121-1122.

A filtrable virus was obtained from the central nervous system of goats imported into Brazil, as well as in indigenous animals. The goats also suffered from a broncho-pneumonia due either to a pasteurella organism or to a mixed infection. The virus was pathogenic for g. pigs and rabbits by the subdural, intra-ocular and middle ear routes and was neutralized *in vitro* by serum from recovered animals.—R. E. Glover.

I. Morosov, M. A. (1936). Ueber den Erreger der Schweinepocken (Variola suilla). Vorläufige Mitteilung. [**Causal Agent of Swine Pox**].—*G. Batt. Immun.* **17.** 324-331. 3 figs. [7 refs.] [In German: English, French and Italian summaries].

II. Morosov, M. A. (1936). Sur l'agent de la variole des porcs (Variola suilla). [**Causal Agent of Swine Pox**].—*Bull. Off. int. Hyg. publ.* **28.** 1944-1945. 2 figs. on 1 plate.

I. An account is given of "elementary bodies" found in the contents of the skin vesicles in swine pox. They appear as diplococci or short chains and measure about 0·25μ. The histopathological changes in the lesions are described.

The strains of virus which were investigated were specific for young pigs, while calves, rabbits and g. pigs proved refractory to infection.

II. Substantially the same as I.—R. E. Glover.

Rous, P., Kidd, J. G., & Beard, J. W. (1936). **Observations on the Relation of the Virus Causing Rabbit Papillomas to the Cancers deriving therefrom. I. The Influence of the Host Species and of the Pathogenic Activity and Concentration of the Virus.**—*J. exp. Med.* **64.** 385-400. 11 figs. on 3 plates., 4 tables, 1 chart. [9 refs.]

Rous, P., Beard, J. W., & Kidd, J. G. (1936). **Observations on the Relation of the Virus causing Rabbit Papillomas to the Cancers deriving therefrom. II. The Evidence Provided by the Tumours: General Considerations.**—*Ibid.* 401-424. 31 figs. on 7 plates. [12 refs.]

A series of experiments showed that all strains of the Shope virus which evoke progressive papillomas in domestic rabbits are capable of inducing malignant growths. The more vigorous the multiplication of the papilloma, the sooner does cancer occur, and differences in carcinogenic actively can be referred to the ability of the virus to maintain activity proliferating papillomas. Cancerous changes were never observed clinically before the fourth month and were often considerably delayed.

In cottontail rabbits, in which the tumours do not usually persist, malignant changes are rarely seen : nevertheless, two cases of malignancy (a squamous cell carcinoma and a metastasizing sarcoma) appeared at the bases of old-standing papillomas. The infrequency with which cancer develops in this species is not due, however, to any racial peculiarity, since carcinoma can be readily induced by tarring the skin. Actually, the exact mechanism which induces papillomas to become cancerous is not known, but numerous local factors probably play a large part.

The production of secondary tumours in the lungs, etc. is also discussed.

—R. E. Glover.

I. Lubbehusen, R. E., Beach, J. R., & Busic, W. H. (1936). **Fowl-Pox Virus Vaccination of Day-Old Chicks. A Preliminary Report.**—*J. Amer. vet. med. Ass.* **88.** 397-412. 6 figs., 1 table. [4 refs.]

II. Komarov, A., & Kligler, I. J. (1936). **Further Studies on the Efficacy of Fowl-Pox Vaccines.**—*J. comp. Path.* **49.** 90-95. 1 table. [4 refs.]

III. Solarino, G. (1936). Recherches sur le virus de l'affection diphtéro-varioleuse chez les oiseaux. [**Fowl Pox**].—*Boll. Sez. ital. Soc. int. Microbiol.* **8.** 12-14. [4 refs.] [In French].

IV. Solarino, G., & Alibrandi, A. (1936). Recherches ultérieures sur le virus de l'affection diphthéro-varioleuse des oiseaux. 2. Note. [**Fowl Pox. II**].—*Ibid.* 69-71. [9 refs.] [In French].

I. Vaccination of day-old chicks was carried out on 36,691 chicks in 45 groups on 12 farms. All groups came from commercial hatcheries and were vaccinated just prior to being put under brooders. Using unattenuated fowl pox virus of the standard concentration of commercial vaccines, vaccination by the stick method in the region of the thigh resulted in the production of a " take " in all chicks vaccinated, and an incidence of secondary pox lesions so low that it was not considered to be a factor responsible for post-vaccination mortality.

Results indicate that a vaccination " take " is accompanied by a systemic reaction which results in at least a temporary inhibition of normal weight gain and a lowered vitality, the degree of which is influenced by the severity and duration of the local reaction. This systemic reaction may, if unfavourable brooding conditions and concurrent disease are also present, contribute to excessive mortality. When chicks are vaccinated at three weeks of age the loss in weight and growth is less than in chicks vaccinated when one day old and is practically absent in chicks vaccinated at eight weeks of age.

II. In previous experiments K. and K. concluded that pigeon pox vaccine was innocuous, whereas attenuated fowl pox vaccine involved the risk of secondary lesions, but produced a more solid and lasting immunity. The experiments recorded here were carried out in order to find whether it was possible to retain the immunizing value of fowl pox vaccine and at the same time reduce or eliminate the risk of secondary lesions.

Combinations of fowl pox and pigeon pox vaccines were used, but there was no advantage to be found in using a double vaccine or a double method of vaccination. The stick method of vaccination reduced to a great extent the incidence of secondary lesions and the wing appeared to be the most favourable site for vaccination. Early hatched birds in good condition can be successfully vaccinated by the stick method on the wing when two to three months old without serious risk of secondary lesions or debilitating effects on the flock, but it cannot be recommended for late hatched flocks.

III. S. confirms that the virus causing contagious epithelioma of fowls is

identical with that causing avian diphtheria, and that the virus is filtrable through Berkefeld N and Chamberland L_2 filters. It was found possible to cultivate the virus from the livers of infected animals and to produce lesions of contagious epithelioma from these cultures.

IV. This note supports previous work carried out by the authors and gives further proof of the close relationship of the virus of fowl pox to that of pigeon pox.—R. F. Gordon.

I. Bayon, H. P. (1936). **Erythromyelosis in Fowls (Yellow Anaemia) and its Treatment by Liver Extracts.**—*Proc. R. Soc. Med.* **29.** 1227-1233. 5 figs. [17 refs.]

II. Johnson, E. P., & Bell, W. B. (1936). **The Blood pH of Leukotic Fowls and the Filterability of the Leukosis Agent.**—*J. infect. Dis.* **58.** 342-348. 4 tables. [8 refs.]

III. Uhl, E., Englebreth-Holm, J., & Meyer, A. R. (1936). **On Production of Specific Antibodies against the Agent of Chicken Leukosis.**—*Acta path. microbiol. scand.* **13.** 394-400. 6 tables. [17 refs.] [In English].

I. The results of experimental treatment of erythromyelosis (yellow anaemia) in fowls with liver and liver extracts are recorded. Due to the occurrence of odd instances in which there was a lack of reaction following treatment, and also to the excessive fragility of the erythrocytes and the different marrow lesions, it seems justifiable to separate this condition into a distinct group possibly akin to " haemolytic jaundice " of man.

II. The average pH of the blood of 50 normal fowls was found to be 7·56 whilst that of 35 leucotic fowls was 7·57. The difference is insufficient for the diagnosis of leucosis.

It was demonstrated that the causative agent of the various forms of leucosis in chickens is filtrable through membranes which retain *Salmonella pullorum*. The view that a single filtrable agent is responsible for the various forms of leucosis is supported by these experiments, and it is concluded that the particle size of the leucosis agent lies between the limits of 400 and 100 millimicrons or possibly less.

III. A description of experiments carried out in connexion with the production of antibodies against the agent of chicken leucosis. It was found that normal untreated duck serum does not neutralize leucotic agent in chicken plasma.

The sera of ducks immunized with leucotic chicken blood acquired a pronounced inhibitory power against the leucotic agent both in recentrifuged plasma and against the cell-bound agent.

To determine whether the agent-neutralizing power of serum from immunized ducks is due to the presence of simple anti-chicken-antigen, six ducks were immunized with blood from normal hens. It was shown that their sera did not contain demonstrable agent-neutralizing substances. Thus the inhibition of the leucotic agent by duck immune serum would not appear to be a mere neutralization of the agent by anti-chicken-antigen.—K. D. Downham.

PARASITES IN RELATION TO DISEASE (ARTHROPODS).

I. Mellanby, K. (1936). **Experimental Work with the Tsetse-Fly, *Glossina palpalis*, in Uganda.**—*Bull. ent. Res.* **27.** 611-632. 2 figs. on 1 plate, 11 tables, 2 charts. [14 refs.]

II. Mellanby, Helen. (1937). **Experimental Work on Reproduction in the**

Tsetse Fly, *Glossina palpalis.—Parasitology.* **29.** 131-141. 2 figs., 2 tables. [10 refs.]

III. Vicars-Harris, N. H. (1936). *Glossina swynnertoni* **Austen, in Relation to Various Vegetation Types.**—*Bull. ent. Res.* **27.** 533-557. 2 figs., 2 tables, 16 graphs. [7 refs.]

I. Laboratory studies on the effect of temperature and humidity on the tsetse fly, *G. palpalis*, indicated that, in the lakeshore areas of Uganda, neither the temperature nor humidity factors are likely to exercise a direct controlling effect, since air-temperature and saturation deficiency in the bush are always well below the critical limits for survival of the fly. Loss of water by desiccation is compensated for by a blood meal, and it was found that a hunger cycle in the fly, determining its readiness to feed, was completed in time to prevent excessive desiccation occurring, even under much drier conditions than those in Uganda.

Humidity did not affect feeding, metabolism, fertilization, or the development of larvae in the uterus, but affected the emergence of adults, these being unable to escape from the puparia in dry air. The air in the soil spaces, however, where wild pupae were found, was saturated in all cases tested.

The larva is not phototropic, and so is unable to save itself from the effect of direct sunlight, unless dropped by the fly in a shady place.

II. The reproductive cycle of *G. palpalis* is summarized and experiments in Uganda and London on the factors affecting the different phases are described. At 24°C. and a relative humidity of 70 the interval between the birth of successive larvae is ten days; at 22°C. approximately, the cycle is lengthened to 16 days or more; at 30°C. the egg is unable to develop, but larval development is not adversely affected. Under field conditions in Uganda in December, (max. 27°C., min. 16°C.), the cycle took from 12 to 14 days. Temperatures of below 20°C. cause retention of the fully developed larva for a period of up to 12 hours; thus larviposition occurs during the daytime.

Humidity did not affect reproduction over a range of 47 to 100 R.H.

The size of the larva depends on the amount of food taken by the female in the early stages of larval development. Underfed females abort their eggs or partially developed larvae.

III. Organized periodical collections of adult *G. swynnertoni* tsetse flies by native boys were used to gauge the apparent density of the species in 15 common types of vegetation in Tanganyika during the years 1933 to 1936. The results indicated that the fly exhibits a preference for certain vegetation types at different seasons, concentrating in the most open type – " hardpan " soil, with short grass – towards the end of the rainy season, and dispersing into the shadier types when the dry season arrives. This tendency may be masked to some extent when the " hardpan " type is in contact with or intersected by thickets. Towards the end of the dry season the fly tends to concentrate in well-thicketed areas.

The fluctuations in density are considered to be due in most instances to meteorological causes, and not to be an index of the relative fluctuations in the scarcity of food.—J. MacLeod.

I. Mlinac, F., & Oswald, B. (1936). " Šimtira ". Početna istrazivanja obolesti mladih preživaca na jugu, smatmana za tick paralysis: prvi izveštaj u Jugoslaviji. [**Tick Paralysis**].—*Jugoslov. vet. Glasn.* **16.** 111-120. 6 figs. [19 refs.] [English summary].

II. Mlinac, F., & Oswald, B. (1936). Početna istraživanja o otrovnosti vrsta krpelja u Jugoslaviji. [**Preliminary Studies on the Poisonous Properties of the Species of Ticks occurring in Yugoslavia**].—*Ibid.* 415-421. 2 figs. [18 refs.] [English summary].

I. M. and O. investigated tick paralysis in young ruminants in southern Yugoslavia. Affected animals showed various degrees and types of paralysis and either died or recovered spontaneously. No cases were observed after the arrival of cold weather. Affected animals were found to be heavily infested with ticks of the genera *Ixodes*, *Rhipicephalus* and *Hyalomma*. In the absence of any signs of specific infection, a diagnosis of tick paralysis was made.

II. In a continuation of their work, the authors examined the indigenous ticks of ruminants in Yugoslavia and made experiments on the toxic action of the eggs of *Hyalomma aegyptium* on laboratory animals, this tick being the commonest parasite found. Using a standardized extract of tick eggs, it was possible to produce tick paralysis in the animals.

M. and O. have found the following ticks in Yugoslavia :– *H. aegyptium*, *I. ricinus*, *R. bursa*, *R. sanguineus*, *Haemaphysalis punctata*, *Dermacentor reticulatus* and *Boophilus annulatus*.—B. Oswald (Skoplje).

Morris, M. L. (1936). **Demodex folliculorum (canis), its Diagnosis and Treatment.**—*J. Amer. vet. med. Ass.* **88.** 460-467. 3 tables. [4 refs.]

The symptoms are described on the orthodox lines, according to the two types of the disease ; (1) the squamous form, and (2) the pustular form.

Skin scrapings are made, using liquid paraffin as a mounting medium, and the scalpel used is also moistened with it.

Rotenone in an oily base is recommended in the treatment of the disease. The percentage strength and the composition of the base are not given. Out of 86 cases treated, 84 recovered.—J. W. Holmes.

PARASITES IN RELATION TO DISEASE (HELMINTHS).

Artjuch, E. S. (1936). Materiali po gelmintofaune ovec U.S.S.R. (Ukraine). [**Helminth Parasites of Sheep in the U.S.S.R.**].—*Uchen. Zap. Vitebsk vet. zoo. Inst.* **4.** 115-122. 5 tables. [11 refs.] [German summary].

The following helminth parasites were found in sheep in the Ukraine :– *Dictyocaulus filaria* ; *Echinococcus granulosus* ; *Ostertagia circumcinta* ; *O. trifurcata* ; *O. marschalli* ; *Trichostrongylus instabilis* ; *Tr. axei* ; *Tr. vitrinus* ; *Tr. probolurus* ; *Haemonchus contortus* ; *Nematodirus spathiger* ; *N. abnormalis* ; *Trichocephalus ovis* ; *Tr. skrjabini* ; *Chabertia ovina* ; *Bunostomum trigonocephalum* ; *Oesophagostomum venulosum* ; *Fasciola hepatica* and *Dicrocoelium lanceatum*.

Balozet, L. (1936). Cercaires et metacercaires d'un *Brachylaemus*. [**The Cercaria and Metacercaria of a *Brachylaemus* from a Pig**].—*Bull. Soc. Path. exot.* **29.** 504-508. 1 fig. [6 refs.]

B. previously reported the severe infestation of pigs in Tunis with a previously unknown trematode, which he described under the name *Brachylaemus suis*. A search for the intermediate host has shown that a small land mollusc, *Xerophila mendrano*, serves in this role. The cercaria and metacercaria are here described and B. awaits a favourable opportunity of infecting pigs and fully establishing the life-cycle.—E. L. Taylor.

Penfold, W. J., Penfold, H. D., & Phillips, Mary. (1936). **Ridding Pasture of *Taenia saginata* Ova by Grazing Cattle or Sheep.**—*J. Helminth.* **14.** 135-140. 1 table. [2 refs.]

The feeding of large numbers of viable onchospheres of *T. saginata* to sheep

was found not to result in infection. The faeces of the sheep which received these onchospheres, and of a calf treated in the same way, were found not to contain any viable onchospheres, the test being carried out by experimental feeding of the faeces to a calf. Observations on the grazing of cattle on infected pasture showed that the main part of the infection was removed, but that a certain residue of infection reappeared after a short interval, previously inaccessible onchospheres presumably being carried upwards by the growing grass.

An interesting note in the introduction states that, of 90 cases of human infection which came to the authors' notice, 65 did so in reply to an offer of £5 reward for a complete tapeworm, showing the prevalence of unreported infestation in Australia. The average duration of infestation in these 90 cases was 13 years.

—E. L. Taylor.

Foster, A. O. (1936). **A Quantitative Study of the Nematodes from a Selected Group of Equines in Panama.**—*J. Parasit.* **22.** 479-510. 1 table. [15 refs.]

This paper gives an account of the different species of parasitic worms, and the numbers of individuals belonging to the different species collected at the careful *post-mortem* examination of 32 army horses and mules in Panama. The animals had for the most part been stable-fed and, as a result of this and of the good management of the army horses, the worm infestation was found to be very low, and is thought to represent the minimum practical level attainable by the intelligent application of known methods of prevention and treatment. The average numbers found were only 849 per animal, 127 from the caecum, 486 from the ventral colon and 236 from the dorsal colon. Nematodes belonging to 39 species were found, 15 species accounting for 98% of all of the worms which were recovered. Older animals, particularly those over 15 years of age, harboured lighter infestations, presumably because of an age resistance.—E. L. Taylor.

Lapage, G. (1936). **The Effects of Some Natural Factors on the Second Ecdysis of Nematode Infective Larvae.**—*Rep. Inst. Anim. Path. Univ. Camb. 1934-1935.* pp. 280-304. [Numerous refs.]

Previous work by L. showed that hypochlorite solutions, chlorine water or its vapour, or acidified hypochlorite solutions or their vapour, alter the permeability of the sheaths of infective strongyloid larvae and render them (the sheaths) soluble in very weak solutions of caustic soda. The work also suggested that this sensitivity to weak caustic soda solutions may be brought about through the larvae remaining for a long period in faecal or bacterial cultures – perhaps through the acids which develop in them. It was also thought probable that prolonged exposure and climatic changes, particularly to alternative drying and wetting, might bring about the same effect.

The work described in this paper gives support to this general hypothesis.

The larvae used in the observations were grown in pure cultures of *Bact. coli* and belonged to *Haemonchus contortus*, *Ostertagia circumcincta* and to various species of *Trichostrongylus*. The part played by mechanical damage, alternate moisture and dryness, changes in temperature, and by various digestive juices was tested, and it was concluded that changes of temperature alone cannot bring about the second ecdysis, but only through their indirect action on the ionization of the environment and on the activity of the larvae.

pH may act in the same way, by stimulating the larvae to greater activity. Acids, however, may alter the larval sheaths in such a way that osmotic pressure arises and ecdysis results – but this can only come about in the presence of a certain minimum amount of alkali. Ecdysis is also governed by osmotic pressure in

media containing digestive ferments where it is found to be due, not to the action of the enzyme, but of the inorganic salts present in the medium containing the enzyme. Ecdysis following mechanical injury to the sheath, or brought about through the brittleness of the dried sheaths is not regarded as normal.—E. L. T.

I. Huff, G. C., & Boell, E. J. (1936). **Effect of Ultracentrifuging on Oxygen Consumption of the Eggs of** *Ascaris suum*, **Goeze.**—*Proc. Soc. exp. Biol., N.Y.* **34.** 626-628. 2 tables. [12 refs.]

II. Huff, G. C. (1936). **Experimental Studies of Factors Influencing the Development of the Eggs of Pig Ascarid (***Ascaris suum* **Goeze).**—*J. Parasit.* **22.** 455-463. 2 figs., 2 tables. [14 refs.]

I. It has been demonstrated by other workers that structural integrity is of first importance for the normal functioning of the oxidative processes of a cell. H. and B. subjected the fresh unsegmented eggs of *A. suum* to a force 150,000 times that of gravity for 30 minutes in the ultracentrifuge, as a result of which the eggs became completely stratified into a centrifugal cap of heavy yolk material, a middle band of clear protoplasm and a light upper layer of lipoidal material. The respiratory rate was found to be depressed as a result of this structural disorganization, but 24 hours later reorganization of the cellular components had taken place and many of the eggs were found to have developed from the one-celled to the two-celled stage.

II. H. studied the effect upon development of removal of the albumin coat from the eggs of *A. suum*. There was little or no difference at 30°C., but at 38°C. the treated eggs developed much better than the untreated ones. The oxygen intake of the eggs was found to be greatly increased by the removal of the albuminous coat and it is concluded that the function of this coat is to modify the oxygen intake.—E. L. Taylor.

I. Skriabine, K. I., & Schulz, E. E. S. (1936). Les helminthoses pulmonaires des animaux. [**Lungworm Infestations of Animals**].—*Bull. Off. internat. Epiz.* **12.** 407-456. 2 graphs. [1 ref.]

II. Porter, D. A. (1936). **The Ingestion of the Inflammatory Exudate by Swine Lungworms.**—*J. Parasit.* **22.** 411-412. 1 fig.

III. Matoff, K. (1936). Einige Fragen aus der Biologie der Schweinelungenwürmer Metastrongylus elongatus und Choerostrongylus pudendotectus. [**Biology of the Pig Lungworms** *Metastrongylus elongatus* **and** *Choerostrongylus pudendotectus*].—*Tierärztl. Rdsch.* **42.** 597-600 and 617-620. 9 figs. [16 refs.]

I. This paper reviews present knowledge on the pulmonary helminthiases of cattle, sheep, goats, horses, pigs and foxes, and gives a detailed account of the methods employed in the U.S.S.R. for their control. In recounting the life-history of *Dictyocaulus* in sheep and cattle, reference is made to Russian work on the migration of the larvae, showing that only about 1% ever reach the upper part of the herbage and that 89% stay at the base of the herbage plants, the remaining 10% climbing a short way up the stems and blades of grasses and other herbage plants. Work was also carried out in Russia on the transference of *Dictyocaulus* between sheep and cattle; it was shown that *D. filaria* can be transferred from sheep to cattle, although only with difficulty, but that *D. viviparus* cannot be transferred from cattle to sheep.

The section dealing with synthetocaulosis in sheep is brief, as also that dealing with dictyocaulosis in horses and *Crenosoma* in foxes [*Capillaria aerophila* infection is not mentioned]; lungworm infection in pigs, however, is dealt with at length.

A new flotation technique for diagnosis is described, in which a 62% solution of Mg sulphate is used to float the eggs, the ordinary salt and sugar solution not being dense enough to do this. [In another place the Mg sulphate solution is given as 920 g. in one litre].

Intratracheal injection of a solution of iodine in potassium iodide (iodine 1, potassium iodide 2 and distilled water 1,500) has been found very effective for all the lungworms mentioned, except only those concerned in synthetocaulosis of sheep. It is regarded as very important, however, to have the animal on its back when the injection is made, the anterior end of the animal being a little higher than the posterior end, and inclined towards one side for the first injection, and to the other side when the second injection is made 24 hours or three to five days afterwards. The doses recommended are 10 c.c. for yearling sheep, 12 to 15 c.c. for ewes, 20 to 30 c.c. for six-month-old calves, 30 to 40 c.c. for yearling cattle and 0·25 c.c. per lb. for pigs. Sheep can be held, but horses, cattle and larger pigs are fixed on an inclined trestle.

II. As a result of the finding of eosinophiles and red blood corpuscles, HUNG had previously concluded that these worms feed on blood. P.'s observations show, however, that the cells actually come from the bronchial exudate, which is profuse in cases of severe infestation with *Metastrongylus* and *Pudendotectus*, and not directly from the blood. The reason for the absence of their own eggs from their intestinal contents is thought to be the small size of the oesophagus, which would not allow them to pass.

III. M. gives a brief review of work which has been done on the life-histories of these worms, followed by an account of his own observations. Out of 137 pigs, 133 were found to be infected, 85% with *M. elongatus* and 59% with *C. pudendotectus*. The observation of other investigators that the eggs of these species appear unhatched in the faeces is confirmed, and M. has observed that they do not hatch in water, even if left there for a long time, but only if in contact with moist earth. The larval stages in earth-worms and in the pig are described and illustrated by photomicrographs. G. pigs were successfully infected and mature worms recovered from their lungs. Properly formed eggs were never produced, however, in this host.—E. L. TAYLOR.

DE JESUS, Z. (1936). **Practical Methods of Control and Eradication of Kidney-Worm Disease of Swine.**—*Philipp. J. anim. Indust.* **3.** 295-305. 1 fig., 3 tables. [Numerous refs.]

Stephanurus dentatus is the most economically important parasite of pigs in the Philippines. de J. here describes his trials of three different methods of rearing and managing pigs, designed in an attempt to find a practical method for the control and eradication of the kidney-worm and, incidentally, to determine whether or not intra-uterine infestation occurs. The numbers of experimental pigs were rather small, but he was able to conclude that concrete floors are indispensable in the farrowing pens, and ought to be inclined to facilitate drainage. In order to avoid long exposure of the sucking pigs to infection from the sows, weaning should be effected at eight weeks and the young pigs afterwards removed to uninfested pig pens and pastures. If this is done, and strict attention is paid to hygiene while young pigs are running with the sow, it is a practical proposition to raise pigs free from infestation.

Some of the control pigs began to pass eggs in their urine as early as 134 days old, showing that even young infected pigs, as well as older pigs and sows, may be a dangerous source of infection.

Although the pregnant sows were constantly exposed to infection, no instance of intra-uterine infestation of young pigs occurred.—E. L. TAYLOR.

Zucker, Z. (1935). Wrażliwość włośni nieotorbionych na działanie niskiej temperatury. [**The Viability of Unencapsulated Trichinella at Low Temperatures**].—*Przegl. wet.* **48.** 641-649. 4 tables. [8 refs.] [German summary : abst. from orig.]

Unencapsulated trichinella in rabbit flesh were destroyed at a temperature of 8°C. after a period of 20 days, while temperatures of 4°, 0° and −4°C. destroyed them after a period of ten days. A temperature of 4°C. for a fortnight seems, therefore, to be a valuable means for destroying unencapsulated trichinella in infested meat. —K. Szczudłowski (Lwów).

Stuchbery, H. M. (1935). **Parasitic Infection of the Leg and Foot of a Dog.**—*Agric. J. Fiji.* **8.** 29.

A note on the occurrence of the heartworm of the dog, *Dirofilaria immitis*, in the subcutaneous tissues of the leg and foot, a very unusual location. Pin-point openings in the skin, acute inflammation and lameness were observed.—C. R. T.

Babudieri, B. (1936). Remarques sur la biologie des acanthocéphales ; double enkystement des jeunes formes d'Echinorhynchus (Note préliminaire). [**Biology of Acanthocephala. Double Encystment of Young Forms of Echinorhynchus**].—*Ann. Parasit. hum. comp.* **14.** 298-301.

B. came across the young stages of an *Echinorhynchus*, probably *E. polycanthus*, encysted on the peritoneum of a snake, *Vipera ammodytes*. He fed one each to three white rats which were killed for *post-mortem* examination a month later, when cysts containing the identical larvae were found to have developed on the peritoneum of the lower part of the intestine. B. thinks it probable that these intermediate encysted stages of Acanthocephala are so adaptable that not only double, but multiple encystment, may occur in very different kinds of hosts. —E. L. Taylor.

IMMUNITY.

Mégemont, A. (1936). Des différentes tuberculines. Leur emploi dans le diagnostic de la tuberculose bovine. [**Value of Different Tuberculins in the Diagnosis of Bovine Tuberculosis**].—*Thesis, Lyons.* pp. 105. 6 tables. [Numerous refs.]

A series of tuberculous cattle was subjected to comparative tests with different tuberculins. " Old tuberculin ", Finzi's exotuberculin and an anatuberculin prepared by the combined action of heat and formalin gave equally good results, while synthetic medium tuberculin, although not quite so potent in positive animals, was less liable to induce false or doubtful reactions in negative cattle. —R. E. Glover.

Takeda, Y., & Sugai, T. (1936). **Studies on the Sero-Diagnosis of Tuberculosis by the Complement Fixation Reaction. I. Concerning an Antigen Accomplished with a Mixture of Ovo-Lecithine and the Filtrate of Tubercle Bacillus Cultures Grown on a Synthetic Medium. II. Concerning our Improved Antigen.**—*Jap. J. exp. Med.* **14.** 371-374 and 375-380. 7 tables. [10 refs.] [In English].

I. Antigens for the complement-fixation test for tuberculosis are unsatisfactory in regard to specificity and grade of reaction, and an improved product is described. This consists of 0·6 c.c. of 1% alcoholic ovo-lecithine (Merck, Nr.

5331) together with 10 c.c. of an 18-fold dilution of the filtrate of human tubercle bacilli grown on Long's synthetic medium for three months. This antigen is such that, according to Browning's technique, 1 c.c. just fails to provoke anticomplementary action on two units of complement. In antigenic value it was similar to that of Besredka's antigen.

II. In an attempt to improve the preceding antigen, filtrates of cultures grown on Long's medium as above were precipitated with ammonium sulphate, and the filtrate was dialysed and extracted with acetone. The final precipitate was found to possess remarkable antigenicity in regard to both intradermal reaction in experimentally infected g. pigs and fixation of complement. Such antigenicity, as well as the antigenicity of crude filtrate, was enhanced by the addition of ovo-lecithine.—J. W. Emslie.

Feldman, W. H., Hester, H. R., & Wherry, F. P. (1936). **The Occurrence of Bacillus necrophorus Agglutinins in Different Species of Animals.**—*J. infect. Dis.* **59.** 159-170. 2 figs., 3 tables. [15 refs.]

The authors found agglutinins against *Fusiformis necrophorus* in the sera of a large majority of apparently normal horses, cattle, sheep and swine. These specific agglutinins were also found in cattle with hepatic abscesses caused by the organism. There was no significant difference in titre between the sera of healthy and infected cattle. Sera from calves gave negative reactions. The sera from white rats, dogs, rabbits and human beings gave low readings or agglutinins were absent. The authors suggest that this difference may be due to the latter species having few opportunities for contact with the organism.

They found no evidence that the different species are affected with different varieties of *F. necrophorus*. The sera of different species agglutinate antigens prepared from several strains of the organism obtained from lesions in single species. It is concluded that the presence of agglutinins to *F. necrophorus* is not of diagnostic significance.—D. L. Hughes.

I. Rich, A. R. (1936). **Inflammation in Resistance to Infection.**—*Arch. Path.* **22.** 228-254. [Numerous refs.]

II. Anon. (1936). **The Nature of Inflammation.**—*Brit. med. J.* Nov. 28th. 1089-1090. [1 ref.]

III. Menkin, V. (1936). **Mechanism of Increased Capillary Permeability in Inflammation.**—*Proc. Soc. exp. Biol., N.Y.* **34.** 570-572. [4 refs.]

I. Three factors – the mechanical, the phagocytic and the humoral – are concerned in the successful resistance to infection. Fibrinous thrombi in lymphatics and the fibrinous network in tissues act mechanically by enmeshing bacteria and by providing a framework along which the leucocytes crawl to reach the bacteria. This mechanical barrier is of importance chiefly when sufficient time is available for its formation.

In the mechanism of immunity phagocytosis is supreme. The fully immune animal that is deprived of its leucocytes is powerless to stem bacterial invasion and may even succumb to an infection against which it normally possesses a natural immunity. Whilst the polymorphonuclear leucocyte is the body's first defence against most pathogenic bacteria, recent studies failed to reveal any significant difference in the ability of macrophages and polymorphonuclears to phagocytose bacteria. There is evidence to suggest that the lymphocyte, or its derivatives, is responsible for the formation of antibodies, since a lymphocytic response is the earliest and most regular morphological sequel to the introduction of foreign protein into the blood stream.

Local immobilization of bacteria is attributed to the action of agglutinin,

whereby bacteria adhere not only to one another but also to phagocytes or to fixed tissue cells with which they may come into contact. The resulting clumps of bacteria may later be destroyed by bacteriolytic or bactericidal antibodies, or they may die simply as a result of physico-chemical changes in the inflammatory exudate which render it an unsuitable medium for bacterial growth.

Allergy is not a necessary accompaniment of immunity. The hypersensitive and immune animal can be desensitized without loss of immunity ; the normal animal can be immunized without the production of hypersensitiveness, and immunity can be passively induced without transference of attendant hypersensitiveness. Finally, a violent inflammatory reaction is not a manifestation of a high degree of immunity ; on the contrary, the degree of natural immunity is inversely proportional to the extent of the inflammatory response.

This is an important, stimulating and most comprehensive review of recent studies in inflammation.

II. Annotation on the above.

III. One human pleuritic exudate and various inflammatory exudates from dogs and rabbits contained a substance which, if introduced into the normal skin, produced an immediate vasodilatation succeeded by increased capillary permeability. The active principle was recovered by precipitation with saturated ammonium sulphate or 20% sodium sulphate followed by dialysis through cellophane. It was crystalline, soluble in water, thermostable and active at pH 7·4 to 6·5. It did not possess the properties of histamine or " H-like " substance, but it may be either an inorganic ion, particularly potassium, or an intermediate product of nitrogenous metabolism, since those substances were found in increased concentrations in all the exudates examined.—J. W. Emslie.

DISEASES, GENERAL.

I. Miessner, H., & Berge, R. (1936). Infektionskrankheiten der Hühner und deren Bekämpfung. [**Control of Infectious Poultry Diseases**].—*Dtsch. tierärztl. Wschr.* **44.** 516-520.

II. Hartwigk, H. (1936). Die Bedeutung der tierärztlichen Gesundheitskontrolle der Hühnersuchtbetriebe für die Bekämpfung der wichtigsten Krankheiten. [**The Importance of Veterinary Inspection of Poultry Farms**]. —*Ibid.* 526-527.

III. te Hennepe, B. J. C. (1936). Beobachtungen bei der Bekämpfung von Geflügelkrankheiten in Holland. [**Poultry Diseases in Holland**].—*Ibid.* 533-535. 6 tables.

I. M. and B. discuss various infectious poultry diseases and recommend the following control measures :-

Fowl Cholera.—Active and passive immunization.

Avian Tuberculosis.—Constant attention to hygiene, the elimination of all uneconomic birds and those over two years old, and care in breeding.

Fowl Pox.—Prophylactic vaccination of all young birds in conjunction with hygienic measures.

Laryngotracheitis.—Inoculation with vaccines.

Fowl Paralysis and Leucosis.—Prophylactic measures as regards hygiene and breeding.

Salmonella pullorum Infection.—Regular blood tests, healthy living conditions, care in breeding and ruthless slaughter of all suspected birds.

Infectious Coryza.—Hygienic living conditions, the disinfection of hen-houses and the feeding of Ca chloride to young birds.

Epidemic Tremor of Chicks.—No therapeutic measures are of any value. The disease is not inherited and has appeared under the most varied conditions.

II. H. is strongly in favour of the institution of state veterinary control of both poultry breeding and egg production in Germany. Control measures should be directed by a central institute, where experiments could be carried out, diseases diagnosed and *post-mortem* examinations made; in this way valuable information about the health of the poultry population could be collected. He claims that the operation of sanitary control measures over a period of three years freed eight farms in Germany from pullorum disease.

III. The author states that the Dutch Government is keenly interested in the eradication of poultry diseases. Owners may apply for free *post-mortem* examinations on poultry at the State Serum Institute, Rotterdam, where all vaccines and sera – which are issued to veterinary surgeons only – are prepared. At Utrecht University, veterinary students receive special instruction in poultry hygiene, poultry diseases and feeding methods. A more or less centralized experimental and control system, which is popular with farmers, probably accounts for the absence of any serious infectious diseases in a poultry population of 16 million birds distributed over a relatively small area. Statistical tables covering the work of eight years – 1928 to 1935 inclusive – show the incidence of the principal poultry diseases in each year, their seasonal variations and the susceptibility of different breeds to certain diseases. te H. attributes the growing weakness and mortality among poultry to the following causes :–

(1) the use of one-year-old hens for breeding; (2) faulty dietary for laying hens, especially as regards vitamins and minerals, and (3) the unavoidable artificiality of poultry breeders' methods.—M. Burke.

Anon. (1936). **Review of the 1935-36 Laying Trials Mortality in Hens.**—*Harper Adams Util. Poult. J.* **21.** 607-619. 26 tables.

It is stated that the mortality at the Harper Adams trials in 1935-1936 was 20·2%, which is 2 per 1,000 worse than for the 1934-1935 trials. Comment is made that the mortality rate at these trials is only a little worse than the average of all the recognized trials.

There are tables dealing with mortality rates and an analysis of the causes of death over the four previous years. The latter is a classified summary of the *post-mortem* examinations which were conducted by the veterinary adviser [Downham, K. D.] for the past five years upon birds which had died at these trials.

The last table deals with the mortality rate of ducks entered in the trials since the period 1927-1928, which is shown to have increased from 2·8% in 1927-1928 to 8·3% in 1935-1936.—K. D. Downham.

Dobberstein, J. (1936). Ueber die häufigsten Todesursachen der in zoologischen Gärten gehaltenen Tiere. [**Common Causes of Death in Animals in Zoological Gardens**].—*Med. Klinik.* **32.** 311-315. [2 refs.]

Dobberstein, J. (1936). Ueber Sektionsbefunde bei den in zoologischen Gärten gehaltenen Tieren. [*Post-Mortem* **Examination Results on Animals in Zoological Gardens**].—*Berl. tierärztl. Wschr.* **52.** 389-392. [2 refs.]

A discussion of the various infections and sporadic disorders that have been reported in animals in zoological gardens, including a survey of D.'s own experiences with material from 356 mammals and 197 birds. Both articles cover the same ground.

Anthrax, resulting from the feeding of contaminated carcass material, has been described as occurring in a variety of mammals, including lions. Tuberculosis has been encountered in many species of birds and beasts, but in his personal experience D. has seen this disease in monkeys and apes less frequently than other workers. Salmonella infections (particularly *S. enteritidis*) occurred frequently amongst apes as well as rodents and *Pasteurella pseudotuberculosis* caused heavy losses amongst the latter class of animal. Clostridium infections were sometimes encountered amongst the ruminants and botulism occurred in some free-living swans. Johne's disease was noted in one buffalo.

Distemper took a heavy toll of the Canidae and small Felidae, and spirochaetal jaundice was seen in young foxes.

The greatest losses amongst birds were due to mycotic infections of the air sacs, particularly with *Aspergillus* species, whilst tuberculosis, pseudotuberculosis and fowl cholera were also recorded, though less frequently. Salmonella infections were rare.

Helminth parasites were most common in young animals. Coccidiosis caused heavy losses in birds. Both lung and intestinal strongyles were common amongst species of antelope. Spiroptera have been found in an elephant and trichinella in a bear. Cysticercosis was common in herbivora. Tigers have been known to harbour *Paragonimus westermanni* in the lungs, but hepatic distomatosis was rare. Scab occurred in sheep, goats and llamas, and water mites have been found in the respiratory tract of seals.

All manner of sporadic diseases have been encountered, including diseases of the haemopoietic system such as avian leucosis, myelosis in the hyena and lymphadenosis in the giraffe. Tumours occurred with a frequency similar to that encountered in domestic animals.—E. J. Pullinger.

Schoop, G. (1936). Die Jungtierkrankheiten der Edelfüchse. [**Diseases of Young Foxes**].—*Dtsch. tierärzrl. Wschr.* **44.** 851-855.

S. describes diseases on fox farms under two groups :—(a) those occurring in the first five days after birth, and (b) those occurring from the age of one month to six months.

(a) Deaths are usually due to malnutrition of the vixen, to chilling of the cubs, to suffocation of the cubs by the vixen or to lack of milk. These can be largely prevented by good feeding of pregnant vixens, 75% of the diet being meat, and by providing good whelping quarters, which must be really well insulated from atmospheric temperature changes.

(b) Helminth Parasites.—Ascariasis is now widely controlled by dosing three-to four-week old cubs with tetrachlorethylene (0·3 g. per kg. body weight) and repeating it two to three weeks later. S. recommends the stomach tube method. Prophylaxis is also discussed. Hookworms do not give much trouble now. Lungworms (*Eucoleus aerophilius* and *Crenosoma vulpis*) are controllable by hygienic measures.

Protozoan Parasites.- Coccidia are common in foxes but are not of pathological importance. *Eimeria* spp. from other animals are not transmissible to foxes though *Isospora* spp. may be.

Bacterial Diseases.—*Salmonella enteritidis* causes serious losses in foxes in northern Germany but not in the south. Healthy foxes can resist natural or artificial infections, but foxes in poor condition easily become victims. Young foxes under treatment for worms sometimes contract infection after consumption of meat infected with the organism that they would otherwise have resisted.

S. believes that *S. enteritidis* is not " carried " by foxes. Prophylactic vaccination may be a good means of control.

Other bacterial diseases observed by S. include infections by *Pasteurella* spp., *S. suipestifer*, *Mycobact. tuberculosis*, and *S. typhi-murium*.

Virus Encephalitis is a dangerous fox disease [*V. B.* **7.** 225]. Other causes of death are gastric impaction and heat stroke.—J. E.

I. Meissner. (1936). Impferfahrungen bei der Bekämpfung des Abortus-Bang und der Tuberkulose. [**Experience in Vaccination against Bovine Contagious Abortion and Tuberculosis**].—*Prag. tierärztl. Arch.* **16.** 83-86.

II. Vasil, Z. (1936). Essai d'infection simultanée par brucellose et tuberculose chez le cobaye et chez le lapin. [**Experimental Simultaneous Brucella Infection and Tuberculosis in Guinea Pigs and Rabbits**].—*Boll. Sez. ital. Soc. int. Microbiol.* **8.** 148-151. [9 refs.] [In French].

I. Reports of the successful use of live vaccines against B.C.A. In one instance it was possible to continue cattle-farming on a very heavily contaminated property after two doses of " stall-specific " living vaccine had been inoculated at an interval of a fortnight. A proprietary remedy, " abortosan ", is also said to have given satisfaction.

Friedmann's anti-tuberculosis vaccine proved unsatisfactory when submitted to careful trial, and thereafter " antiphymatol " was used as a prophylactic agent against tuberculosis. Available evidence suggested that the agent produced some healing or regression of lesions, but since the data was collected from field experience rather than from carefully planned experiment, the results should be accepted with caution.

II. The author concludes that pre-existing brucella infection in g. pigs does not inhibit the subsequent establishment of a superinfection with avian tubercle bacilli. Furthermore, if the porcine strain of *Br. abortus* and a bovine strain of tubercle bacilli are inoculated simultaneously into g. pigs, both infections develop unhindered by each other. [Very few animals were used in this investigation, the dose of *Br. abortus* was not standardized and the virulence of the strain of tubercle bacilli was not recorded].—E. J. Pullinger.

Koepplin, F. (1935). Gleichzeitiges Auftreten von Skalma bei Pferden und von drüsenfieberähnlichen Erkrankungen beim Menschen. [**Simultaneous Occurrence of " Skalma " of Horses and Glandular Fever of Man**].—*Schweiz. med. Wschr.* **65.** 787-790. 1 fig. [10 refs.]

In March, 1935, disease broke out in the horses and men of a Swiss artillery regiment. The horse disease is said to have been identical with Dieckerhoff's " Skalma", a respiratory affection of horses distinct from both influenza catarrhalis and influenza pectoralis.

The outbreak of disease in the 312 horses rapidly spread from day to day, the illness lasting from 10 to 14 days. The horses showed fever, great tenderness at the throat, mucous nasal discharge and pale conjunctiva. There were no severe complications such as pneumonia, and no deaths.

At the same time 50 out of the 420 soldiers became sick with rhino-pharyngo-laryngitis [said to be glandular fever (infectious mononucleosis)].

Circumstantial evidence suggested that the soldiers had acquired the disease from the horses, but no proof was obtainable.—J. E.

Červinka, V. (1935). Nakažlivý katar horních dychadel u koní. [**Infectious Respiratory Catarrh of Army Horses**].—*Voj. zdravotn. Listy.* **11.** 148-154. 3 charts. [English and French summaries].

An infectious catarrh of the upper respiratory tract occurred in horses of the artillery units in Brno in May and June, 1934. The disease was manifested by cough and in young horses also by fever (38·6° to 40°C.), loss of appetite, and muco-purulent excretion from the nostrils. In some cases there was somnolence. The course of the disease was complicated sometimes with bronchitis and epistaxis. The average duration of the disease was 22 days (7 to 46 days). [There is no indication as to which of the known specific equine infections this condition is related]. There were no relapses and there was no mortality.—E. Přibyl (Brno).

Krembs, J., & Seifried, O. (1936.) Untersuchungen über die Laryngoenteritis infectiosa der Katzen. I. Mitteilung. [**Infectious Laryngo-Enteritis in Cats. I**].—*Arch. wiss. prakt. Tierheilk.* **70.** 259-277. 9 figs., 2 tables. [5 refs.]

Krembs, J., & Seifried, O. (1936). Laryngo-Enteritis infectiosa, eine in Deutschland bisher unbekannte, verlustreiche Katzenseuche. [**Laryngo-Enteritis of Cats**].—*Tierärztl. Rdsch.* **42.** 377-380. [4 refs.]

During the last two years the disease here described has been the cause of death in over one quarter of all dead cats examined at the Institute of Pathology, Munich Veterinary School. The disease is contagious and causes death after an incubation period of about one week and indistinctive illness for from 12 hours to three days.

The symptomatology of the affection is not distinctive. The period of illness is short and the mortality high, and lesions are most evident in the larynx and intestines.

The characteristic lesions include at first catarrhal and, later, diphtheritic inflammation of the laryngeal region and small intestine and swelling of the mesenteric lymph nodes. The trachea is involved in 40% of cases. These changes are described in great detail macroscopically and microscopically.

K. and S. say that the disease is different from infectious feline gastro-enteritis, cat distemper and cat angina.—J. E.

Hamerski, E. (1936). Zakaźne zapalenie jelit u kotów. [**A New Virus Disease of Cats**].—*Przegl. wet.* **49.** 513-527. 6 tables. [8 refs.] [German summary].

An outbreak of a new fatal disease of cats which occurred last year at Lwów in Poland, characterized by symptoms of enteritis and peritonitis, is described.

Post-mortem examination disclosed swelling of the walls of the ileum and colon, enlargement of the mesenteric lymph nodes, haemorrhagic inflammation of the serous surfaces, and numerous small white or reddish nodules in the omentum and in the lungs. The blood picture was markedly altered, showing neutrophilia, lymphopenia and eosinophilia. Attempts to spread the disease by contact gave positive results. It has been suggested that a filtrable virus is responsible. The complications were caused by secondary infection with salmonella.

—A. Szwabowicz (Lwów).

I. Hetzel, H. (1936). Ein Beitrag zu den Ursachen des abakteriellen Verwerfens der Stute. [**Non-Bacterial Abortion in Mares**].—*Tierärztl. Rdsch.* **42.** 773-776 and 793-795. 3 figs., 1 table. [11 refs.]

II. Götze, R. (1936). Unfruchtbarkeit in der Pferdezucht. [**Sterility in Horses**].—*Dtsch. tierärztl. Wschr.* **44.** 835-839. [6 refs.]

III. Meyer. (1936). Die Unfruchtbarkeit in der Pferdezucht. [**Sterility in Horses**].—*Ibid.* 839-841.

IV. Peters. (1936). Die manuelle Untersuchung der Stute auf Trächtigkeit. [**Manual Examination of Mares for Pregnancy**].—*Ibid.* 841-843. 8 figs. [3 refs.]

V. Richter, J. (1936). Sterilität männlicher Tiere. [**Sterility of Male Animals**]. —*Berl. tierärztl. Wschr.* **52.** 741-748 and 757-762. 24 figs. [Num. refs.]

I. When investigating abortion in mares in Hungarian studs, H. first excluded infection, bad care and bad feeding. He then enquired into family and breeding history, and the results showed familial tendency to sterility and abortion. The mechanism of abortion in " affected " mares seemed to be connected with hormone production as, whilst mares which produced live foals excreted anterior pituitary hormone, folliculin and progesterone in the urine (when tested at 10 months' gestation), many aborting mares were excreting none when examined (at periods of from 4 to 10 months' gestation).

II. A general lecture. G. states that the causes of infertility in mares in Germany are in the following order of importance :– (1) physiological infertility due to mating at the wrong time [see *V. B.* **5.** 858.] ; (2) diseases of the female genital tract, and (3) male impotence. Each cause is described at length. The technique for artificial insemination is discussed.

III. A practical commentary on the mating of mares and causes of infertility.

IV. A description of examination of the uterus of the mare, *per rectum*, for pregnancy diagnosis. The paper should be read in the original. P. states that the earliest stage of pregnancy that can be diagnosed manually *per rectum* is five to six weeks' gestation, when the embryonic sac is a soft spot [about one inch in diameter] in the horn of the uterus near the bifurcation. Great digital sensibility and practice are, however, necessary to enable a definite diagnosis to be made at that stage.

[II, III and IV were discussed at a meeting, and further information on sterility in mares in Germany was given by various speakers].

V. A very valuable brief review of the literature and a report of many cases examined by R. The following conditions are described, some with case records and illustrations :–

Bull.—Infertility due to acclimatization and debilitating diseases ; impotence due to anatomical malformation and to local inflammation ; testicular necrosis due to *Brucella abortus* infection, to tuberculosis, or to pseudotuberculosis, or other causes ; seminal obstruction due to inflammation of the epididymis, and testicular atrophy.

Stallion.—Senile sterility.

Goat.—Congenital micro-orchidy, testicular atrophy and seminal obstruction due to non-patent epididymis. This is said to be common in goats and is a characteristic clinical and pathological condition, easily diagnosed.

Ram.—Cryptorchidy, *Corynebact. pyogenes* infection of the testis with atrophy, atrophy due to fibrosis of unknown origin, calcification of one testis and seminal obstruction due to epididymitis.

Boar.—Tuberculosis and *Br. abortus* infection of the testes, testicular atrophy from orchitis or periorchitis, and inherited azoospermia.—J. E.

Obrtel, J. (1935). Přispěvek ke studiu příčin retence sekundin u skotu. [**The Causes of Retained Placenta in the Cow**].—*Klin. spisy Šk. zvěrolék., Brno.* **12.** 109-166. 6 figs. [Numerous refs.] [German summary].

Theories regarding the causes of retained placenta in animals may be divided into two groups. One group attributes the condition to incorrect feeding, abortion, atony of the uterus, mechanical disturbances and constitutional influences. The

second group, on the ground of the histological alterations in the placenta, explains the retention as a productive inflammation of the caruncles due to infection.

O. supports the second theory, considering that, as a result of the inflammatory process, the villosities of the cotyledons become constricted and are retained in the crypts.—E. Přibyl (Brno).

Berge, E. (1936). Ueber die Arthritis deformans beim Fohlen. [**Arthritis Deformans of Foals**].—*Berl. tierärztl. Wschr.* **52.** 645-649. 6 figs. [10 refs.]

Arthritis deformans of the femoropatellar joint of foals is of common occurrence in middle Germany. The condition is usually observed in foals of heavy breeds between one and two years of age but as it takes time to develop to the clinically apparent stage, the joint lesion is believed to begin in the first few months after birth. Symptoms include swelling of the joint with progressive lameness, generally accompanied by luxation of the patella, usually unilateral. All stages of deforming arthritis are observable according to the age of the lesion. There is at first synovitis and later the articular cartilage becomes eroded and is cast off in flakes or large pieces. The underlying bone also becomes involved. The mechanism and cause of the condition are discussed but no conclusions are drawn.—J. E.

Wild, T. (1936). Přispěvek k vyskytování se ložiskových změn v zortě skotu a koní. [**Calcification of the Aorta in Cattle and Horses**].—*Zvěrolék. Obz.* **29.** 281-294. 3 figs. [15 refs.]

W. observed calcification of the aorta in seven cows and four horses and summarizes the findings as follows :– calcification of the middle coat is of frequent occurrence in the thoracic aorta of old cows and affects the dorsal wall, whereas in horses the calcified foci are located in all parts of the middle coat ; in cows they are found only in the middle and internal part.—E. Přibyl (Brno).

Vink, H. H. (1936). Cirrhosis hepatis bij de huiskieren. Een pathologisch-anatomisch onderzoek. [**Cirrhosis of the Liver in Domestic Animals**].—*Tijdschr. Diergeneesk.* **63.** 241-245. [English, French and German summaries].

A précis of the author's thesis [*V. B.* **4.** 379].– M. J. J. H. (Rotterdam).

Bos, A. W. A. (1936). Enkele gevallen van abnormale pigmentvorming bij dieren. [**Abnormal Pigmentation in the Kidneys and Adrenal Glands of Cattle**].—*Tijdschr. Diergenessk.* **63.** 790-799. 1 fig. [18 refs.] [English, French and German summaries].

B. found a pigment abnormality in the kidneys and adrenal glands of two bovines. The kidneys were dark and microscopic examination showed that the brown pigment was principally in the epithelial cells of the convoluted tubes, but no pigment, or only a small quantity, could be detected in the narrow parts of the loop of Henle or in the glomeruli. A thin layer of mucus, in which pigment granulae were present, covered the renal pelvis, indicating that the pigment had been excreted. From microchemical reactions it was demonstrated that the pigment was a lipofuscin. The terms haemochromstosis and melanosis should not be used for this anomaly. It is better to speak of " pigmentatio fusca ".

The pigment in the adrenal glands was principally situated in the connective tissue of the cortical substance and in cells of the medulla and it was determined microchemically that it consisted of melanin.

It is presumed that there is a connexion between the activity of the adrenal glands and skin pigment formation.—M. J. J. Houthuis (Rotterdam).

Hjärre, A., & Berthelsen, H. (1936). **Proliferative Processes in the Reticulo-Endothelial System (R.E.S.) in Domestic Animals.**—*Acta path. microbiol. scand.* Suppl. 26. pp. 49-76. 18 text figs., 5 figs. on 2 plates. [Numerous refs.] [In English].

Veterinary pathological literature is very scanty on this subject. Six cases are described, in animals, which H. and B. consider comparable to the R.E. proliferations described in man. Three are classified as disturbances of the lipoid metabolism, and three as blastomata. In the lipoid cases there was marked proliferation of the R.E. cells, in the livers, spleens, lungs, kidneys and lymph nodes, with lipoids and neutral fats stored in foamy cells. One of these cases was an aged horse, which showed greyish-white nodules, streaks, or diffuse infiltrations in the liver, spleen, kidneys and lungs, and enlarged, soft and greasy lymph nodes.

The other two cases were mink, in which the amount of lipoid material was small. Detailed histological examinations showed the proliferated cells to belong to the R.E.S. Particular classification is difficult, but the condition may at least be regarded as a xanthomatosis.

The remaining three cases, all blastomata originating in the R.E. cell element, occurred in horses. The first is considered to be a reticulo-endotheliosis of lymph nodes, liver and spleen, in which the endothelial component is dominant. The second case is a reticulo-endothelial sarcoma in a pelvic lymph node, and the third a similar growth except that it appeared to emanate from the spleen and to infiltrate the lineal lymph nodes.

It seems probable that, although such tumours have not been described in the domestic animals, they may have previously been included under other names, such as lymphosarcoma.—Norman Hole.

Upp, C. W., & Tower, B. A. (1936). **The Incidence of Blindness and Paralysis according to Family.**—*Poult. Sci.* **15.** 421.

This is a preliminary report upon experiments carried out to determine whether inherent differences exist in resistance to blindness, fowl paralysis and related conditions in poultry. The contention of some workers that blindness is merely a late manifestation of fowl paralysis is not tenable from the data available.

—K. D. Downham.

I. Wyssmann, E. (1936). Ueber eine eigentümliche " Zitterkrankheit " bezw. " Zitterkrampf " bei Kälbern. **[A Peculiar Trembling Disease of Calves].**—*Schweiz. Arch. Tierheilk.* **78.** 192-202. 3 figs. [9 refs.]

II. Egli, J. F. (1936). Ueber den " Zitterkrampf " der Kalber und Liquoruntersuchungen beim Rind. **[Trembling of Calves : Examination of the Cerebrospinal Fluid in Cattle].**—*Ibid.* 235-253. 3 figs. [Numerous refs.]

I. An account of a peculiar type of locomotor disturbance in two six-month-old heifer calves. The symptoms included inability to rise, standing with forelegs stiff and set far forward when placed in the standing position, shivering, stumbling and accelerated respiration. Both animals improved after the administration of hexamine.

II. This is a general account of the disease in calves, together with a description of five cases. The disease is commonest in spring. The characteristic symptoms are cramp-like contractions of the muscles of the forelegs with muscular twitching, especially marked when the animal attempts to rise.

Attempts to transmit the disease to healthy calves by the inoculation into the subarachnoid space of the cerebrospinal fluid of affected animals were unsuccessful. Subcutaneous inoculation into healthy calves of the blood serum of affected

animals also failed to produce the disease. Histological examination of the nervous system revealed no significant changes. Hexamine gave good results in affected animals.

E. has worked out a useful method for obtaining cerebrospinal fluid by puncture through the occipito-atlantal space. In healthy cattle, the fluid is water-clear, has a specific gravity of 1005 to 1008, and contains no albumin. Occasional leucocytes were found.

There were a few attempts by lumbar and occipital puncture to measure the pressure of the cerebrospinal fluid.—E. G. White.

Heijl, C. (1936). **On Rudimentary Twin Formations.**—*Acta path. microbiol. scand.* Suppl. 26. pp. 178-189. 25 figs. [In English].

Foetal double formations occur both in human beings and in animals. H. deals with rudimentary forms of unioval origin, which he classifies as acardiac monsters, teratomata and dermoids. Acardiac monsters may have otherwise complete organs without development of external shape, but this is rarely the case with teratomata and dermoid cysts. Notomeli and pygomeli [foetuses or monsters with additional legs, as sometimes seen in cattle] are really transitions between teratomata and double formations, with one dominant development. A rudimentary twin in the epigastrium is another form seen in animals; H. describes a kitten with an attached parasite composed of a pelvis, female genitalia, and a pair of hind legs. The hereditary nature of such unioval developments is accepted; it seems that some fault in the chromosome stage is responsible.—Norman Hole.

Parnes, J. (1936). Mięsniochwat u koni. [**Acute Nutritional Myositis of Horses in East Poland**].—*Przegl. wet.* **49.** 474-485. [French summary].

Large areas in eastern Poland are subject to periodical flooding, which has produced a poor type of pasture land containing sour grasses. Horses which graze on this grassland are liable to myositis, which may affect various groups of muscles, but it usually affects the lumbar group, producing, according to the author, a condition clinically resembling myohaemoglobinuria paralytica. The attacks may be acute, subacute or chronic. The acute form is treated by venesection, intravenous injections of 1% soda bicarbonate with 5 g. calcium chloride. The chronic form is treated with stimulants.—A. Szwabowicz (Lwów).

Gallina, L. (1936). Ancora della nuova ipotesi sulla eziologia del collasso puerperale e della possibilità di terapia ormonale. [**New Theory on the Cause of Milk Fever**].—*Clin. vet., Milano.* **59.** 567-569.

The available evidence suggests that lactation is primarily controlled by hormones, in which case milk fever may be due to hormonal disturbances. It may be that the mammary gland itself secretes a hormone which is activated or controlled by other hormones and that, if this balance becomes upset, milk fever results. Another possibility is that the mammary gland withdraws from the blood stream hormones necessary for the normal autonomic functions of the body and that, if this withdrawal is excessive, milk fever develops. There is also the possibility that, if the uterus undergoes rapid involution due to an abnormal output of the posterior pituitary hormone, the hormonal balance may be affected and milk fever produced. [It is now fairly certain that the actual secretion of milk is brought about by the hormone, prolactin secreted by the anterior pituitary gland].—J. A. N.

Askew, H. O. (1935). **Bush Sickness Investigations.**—*Rep. Dep. sci. industr. Res. N.Z. 1935.* pp. 32-33. 1 table.

Five groups of hoggets were utilized in feeding experiments on " bush sick " country at Glenhope, near Nelson. A control group failed to put on weight, but groups fed with Nelson soil, Nelson soil after extraction with HCl, the liquid extract from Nelson soil and Wakatu soil all remained healthy and increased in weight. There is apparently sufficient of the necessary element, even in HCl-extracted soil, to keep sheep healthy.—C. S. M. Hopkirk.

Baskett, R. G., & Lamont, H. G. (1936). **Nutritional Anaemia in Pigs.**—*Agr. Progr.* **13.** 93-97. 1 table. [4 refs.]

Deficiency of iron in sows' milk may produce a fatal anaemia in pigs from four to six weeks old, which is characterized by paleness of skin, drooping ears and tail and is finally accompanied by rapid breathing. Treatment consists of rearing the pigs on clean pasture and allowing them access to fresh earth or, most effectively, of painting the sows' teats with a treacle solution containing copper and iron sulphates. No udder troubles develop from the latter treatment.—A. E.

PUBLIC HEALTH.

I. Rabagliati, D. S. (1936). **A Consideration of the Accredited Producers' Scheme of the Milk Marketing Board.**—*Vet. Rec.* **48.** 1249-1266.

II. Rabagliati, D. S. (1936). **Tubercle-Free Herds – Present Position and Policy.**—*Ibid.* 1266-1271. [5 refs.]

III. Anon. (1936). **The Administration of the Attested Herd Schemes and the Milk (Special Designations) Order of 1936.**—*Ibid.* 1271-1273.

I. R. discusses the initial difficulties in the administration of the scheme first introduced by the Milk Marketing Board. These difficulties were largely overcome when it was decided that the conditions should comply with those of Grade A milk produced according to the Milk (Special Designations) Order (1923). Under the revised Order of 1936 this grade of milk is known as " Accredited Milk ", with certain modified conditions, and the producer of such milk is entitled to an extra 1d. per gallon allowed by the Milk Board, no matter how it is sold. The quality of the milk in so far as bacterial count is concerned is judged by the methylene blue reduction test. The scheme is administered by the county councils, and licences are usually granted by the Public Health, Housing and Agricultural Committees in a county borough, subject to approval of the premises. R. suggests that it would be more satisfactory and economical for the veterinary staff to carry out the duties of inspection along with the local sanitary inspectors of urban and rural districts and that there should be close co-operation with the Medical Officer of the county in defining the standards required by the Order. The principles of cow-shed construction, inspection of dairy cows and collection of milk samples are discussed.

II. A discussion of the regulations of the Orders referred to above.

III. A description of the progress made in the number of tuberculosis-free herds licensed under the Attested Herd Scheme and under the Milk (Special Designations) Order of 1936. Under the former scheme, the number of free herds increased to 266 (144 in Scotland and 122 in England and Wales) and 1,048 licences have been granted under the latter.—S. J. Edwards.

I. Maternowska, Irena. (1936). Bakteriologiczna kontrola mleka stassanizowanego znajdującego się w handlu. [**Bacteriological Tests of Commercial Stassanized Milk**].—*Hig. Prod. Zwier.* **1.** 94-103. [4 refs.] [German summary]. Suppl. to *Wiad. weteryn.* **15.**

II. Lawrynowicz, A. (1936). Sprawa bakteriologicznej oceny mleka w Polsce. [**Problem of Bacteriological Milk Examination in Poland**].—*Ibid.* 85-90. [French summary]. Suppl. to *Wiad. weteryn.* **15.**

I. M. examined stassanized milk in Copenhagen. In 1 c.c. of this milk she found from 100,000 to 1 million bacteria of different kinds, among which there were many proteolytic and sporulating specimens. She suggests that the bacterial contamination was due to inadequate stassanization, secondary infection conveyed in the water in which milk bottles were washed, and the keeping of the milk in premises where there was an improper temperature.

II. L. discusses the problem of standardizing the bacteriological examination of milk in Poland. He suggests more particularly the establishment of a *Bact. coli* content standard in various grades of milk.—A. Szwabowicz (Lwów).

I. Meyer, R. (1936). Zur Statistik der Fleischvergiftungen im Jahre 1935. [**Meat Poisoning Statistics, 1935**].—*Z. Fleisch- u. Milchhyg.* **47.** 21-24. 4 tables.

II. Sandiford, B. R., Ali, M., & Sallam, H. A. (1936). **Two Outbreaks of Food Poisoning in Egypt Associated with Anaerogenic Strains of Bacterium aertrycke.**—*J. Egypt. publ. Hlth Ass.* **10.** 16-20. 3 tables. [1 ref.]

I. The figures given for the outbreaks, numbers of persons affected and the numbers who died from meat poisoning during 1935 are analysed according to (1) the type of animal from which the meat was derived; (2) whether the animal was slaughtered in an emergency, or (3) whether the meat was some form of prepared food. The two highest numbers, both from the point of view of outbreaks and persons infected are those concerned with beef and sausage. Goat flesh and mutton were not implicated.

Each class of case is discussed, as to whether the infection of the meat could be traced to *ante-mortem* or *post-mortem* infection. Several types of salmonella were concerned, the two most usual types being *S. typhi-murium* and *S. enteritidis*. There were 32 outbreaks of botulism, involving 82 persons, of whom 11 died.

Of the total number of outbreaks (119), one involved 243 persons, though the greater number (86) were confined to five persons or less.

Only in six of the outbreaks was it possible to show that the infection was derived from the *ante-mortem* infection of the animal; it is, therefore, concluded that the commonest form of infection is *post-mortem*.

In addition to the meat poisoning statistics given, mention is made of 31 outbreaks of poisoning by ducks' eggs; 192 persons were infected and there were 11 deaths.

II. Two outbreaks of food poisoning, involving 128 and eight cases respectively, are recorded. They occurred in different parts of Egypt and, in both, the causal organism was a non-gas-producing variety of *Salmonella typhi-murium* (*Bact. aertrycke*).

In the first outbreak the vehicle of infection was flesh from a camel which had broken its leg but was slaughtered some time later when moribund. *S. typhi-murium* was isolated from the marrow of a portion of the scapula.

In the second outbreak the vehicle of infection was assumed to be meat from a sick sheep, but portions of the food were not available for laboratory tests.

Attempts to produce gas-forming variants by growing the strains in a medium containing sugar and formate were not successful.—R. Lovell.

I. Lerche. (1936). Zur Entstehung bakterieller Lebensmittelschädigungen durch Geflügel und Geflügelprodukte. [**Bacterial Food Poisoning Originating from Fowls**].—*Dtsch. tierärztl. Wschr.* **44.** 531-533.

II. Asche, H. (1936). Ueber die Malachitgrunplatte zum Nachweis von Fleischvergiftern. [**Demonstration of Meat Poisoning Organisms by Malachite Green Medium**].—*Tierärztl. Rdsch.* **42.** 577-580. 1 table. [8 refs.]

I. Latent salmonella infection is comparatively common amongst waterfowl. Salmonella were isolated from 5·7 % of a large number of eggs examined. Viable organisms were found not only inside the eggs but also in dried faeces on the shells of eggs which had been stored in all variety of ways. Danger of food poisoning arises only when eggs are used raw or in a very lightly cooked state. The danger of contaminated meat also exists.

II. Various strains of *Bact. coli* and intermediate coliform types show a varying resistance to malachite green. Consequently it is not possible to suppress all contaminants with a concentration of dye which will allow all members of the *Salmonella* genus to grow. Bacterial examination for *Salmonella* is rendered more reliable by the use of fluid enrichment media.—E. J. Pullinger.

I. Anon. (1936). **Helminthiasis.**—*Quart. Bull. Hlth Org. L.o.N.* **5.** 181-182.

II. du Toit, P. J. (1936). **Internal Parasites in Relation to Meat Supplies.**—*Ibid.* 182-183.

I. Worms infesting meat were discussed and the following two resolutions were passed :– (1) that insurance schemes intended to compensate farmers for slaughter animals, found to be infected with measles, should be abolished, and (2) that an endeavour should be made to improve hygienic conditions on farms and that necessary steps should be taken to prevent the infection of animals with cysticercus.

II. A general review, with special reference to South Africa.—J. E.

Cameron, T. W. M. (1936). **Parasites of Animals and the Public Health in North America.**—*Amer. J. publ. Hlth.* **26.** 46-50.

This article is a semi-popular note on parasitology in relation to public health, drawing attention to the intimate relation between human and veterinary parasitology, and discussing the human parasites which also affect lower animals, and others which require lower animals for part of their life-history.—J. MacLeod.

Goerttler. (1936). Das Verbot der Verwendung von bakterienhaltigen Mitteln zur Schädlingsbekämpfung. [**The Prohibition of Bacterial Vermin Killers in Germany**].—*Dtsch. tierärztl. Wschr.* **44.** 468-469.

Following the infection of human beings and domestic animals with paratyphoid bacteria laid down as rat killer in Silesia, it has been necessary to prohibit the use of bacterial rat " poisons " in Germany. This was enacted in March, 1936. G. discusses the findings leading up to this decision.—J. E.

THERAPEUTICS AND MATERIA MEDICA.

Faure-Brac, G. (1936). Traitement de la leishmaniose canine par les composés d'antimoine. [**Treatment of Canine Leishmaniasis by Antimony Compounds**].—*Cah. Méd. vét.* **6.** 11-16. [2 refs.]

Satisfactory results have been obtained in dogs with anthiomaline (lithium antimonio-thiomalate). From 25 to 35 intramuscular injections at intervals of 42 hours are suggested ; the dose varies from 0·5 to 5 c.c., depending on the size of the animals. A small number of animals fail to react.—J. M. Robson.

Sprehn, C. S. (1936). Ueber die Bekämpfung des kleinen Leberegels *Dicrocoelium lanceatum* mit dreiwertigen Antimonpräparaten. [**Treatment of** *D. lanceatum* **Infestation by Trivalent Antimonials**].—*Berl. tierärztl. Wschr.* **52.** 584. 1 graph. [5 refs.]

D. lanceatum infestation is of comparatively little economic importance in Germany, but is of equal, or greater importance, than parasitic gastritis or liver rot in Anatolia, and an effective anthelmintic would be very valuable. Up to the present, nothing has proved of any value but, encouraged by the several reports of the action of " fouadin " on *Opisthorchis* in cats, S. tried it and obtained successful results. Two intramuscular injections of 20 c.c. on two successive days were used in adult sheep. For 2 to 4 days afterwards, the number of eggs in the faeces was found to have greatly increased, but from 10 to 12 days afterwards they disappeared completely and did not appear again.—E. L. Taylor.

I. Levine, P. P. (1936). **The Treatment of Ascariasis in Chickens.**—*Cornell Vet.* **25.** 120-127. 3 tables. [12 refs.]

II. Newbigin, H. F., & Morgan, D. O. (1936). **The Effect of Certain Dressings on Worm-Infested Poultry Runs.**—*Scot. J. Agric.* **19.** 162-166.

III. Dungal, N., & Gislason, G. (1936). **Nematodes in Sheep in Iceland. Experience with Carbon Tetrachloride Drenches.**—*J. comp. Path.* **49.** 210-217. 3 tables.

IV. Spindler, L. A. (1936). **Effect of Ferrous Sulphate and Copper Sulphate on Experimental Infection of Pigs with the Nodular Worm, Oesophagostomum dentatum.**—*N. Amer. Vet.* **17.** No. 12. 29-32. 1 table. [4 refs.]

I. A description of experiments undertaken to determine the value of tobacco-dust treatment as a means of controlling round worms in poultry. It was found that tobacco dust (nicotine content 1·78%), when fed to chicks continuously from the day of hatching in concentrations of 2%, 4%, 6% and 8% in dry mash, did not prevent hatching of embryonated eggs of *Ascaridia lineata*, and the invasion of the intestinal mucosa by the larvae. The treatment proved toxic in the 6% and 8% concentrations, the mortality reaching 9% and 40% respectively.

In tobacco-treated (2%) and control birds, fed with the same number of embryonated ascarid eggs, until the seventh week of parasitism, there were no significant differences in worm numbers.

In a further experiment, 88% of mature worms were removed from a group of pullets by tobacco treatment. It would thus appear that immature worms are less susceptible than adults. " Black Leaf " worm powder (a 5% nicotine compound composed of nicotine sulphate mixed with a special Fuller's earth) was efficient in 100% of cases when given in a single dose to 45 pullets infested with adult worms.

II. N. and M. refer to the losses sustained by the poultry industry through worms. Vermifuges are stated to be of doubtful benefit, and an experiment to test the efficiency of certain dressings on infested runs is described.

Five plots of land (12 yards by 10 yards) infested with at least *Heterakis gallinae*, *Capillaria longicollis*, *Ascaridia galli*, and *Davainea proglottina*, were treated as follows :- (1) 6 cwt. agricultural salt ; (2) control (untreated) ; (3) 2 cwt. ground lime ; (4) 2 cwt. sulphate of ammonia, and (5) 50 galls. of 1·75% solution of sulphuric acid.

Chickens reared free from worm infection were subsequently exposed on each plot. These birds were later killed and examined.

It was found that, despite the heavy chemical dressings, there was no marked reduction in the infestation on any of the plots.

III. During the last few years intestinal nematodes have caused severe losses amongst sheep in Iceland. The most harmful of these parasites appears to be *Bunostomum trigonocephalum*, which causes wasting and anaemia, and *Chabertia ovina*, which is responsible for severe diarrhoea and high mortality. As a result of complaints from various parts of the country, experiments with drugs were undertaken by D. and G. in 1933. The following preparations were tried :—chenopodium oil ; Cooper's arsenic tablets (each containing 0·027 g. of arsenic) ; copper sulphate (1 % watery solution) ; tobacco leaves, and carbon tetrachloride.

The administration of carbon tetrachloride gave the best results and reports received from about half of the farming population showed that treatment was remarkably effective.

The condition of the sheep improved definitely, and losses from intoxication were very small, as only 217 (0·007 %) sheep died out of 300,000 treated.

IV. A description of an experiment undertaken to show the effects of the daily administration of a mixed aqueous solution of F_2SO_4 and C_0SO_4 to pigs artificially infected with nodular worms (*Oesophagostomum dentatum*). Four tests, involving four test animals and six controls, were carried out. At the end of the test period, all the pigs were slaughtered and *post-mortem* examinations carried out.

It was found that the animals which had been dosed with the iron-copper solution gained weight more rapidly and were in better condition than the controls, in spite of the fact that the former were, in all cases, more severely infested with worms.—J. M. L. Penhale.

I. Falk, Carolyn R., & Aplington, Sophronia P. (1936). **Studies on the Bactericidal Action of Phenol and Merthiolate used alone and in Mixtures.** —*Amer. J. Hyg.* **24.** 285-308. 4 figs., 9 tables. [12 refs.]

II. LeBlanc, T. J., & Welborn, M. B. (1936). **The Common Cold : the Effect of Merthiolate as a Therapeutic Agent.**—*Ibid.* 343-349. 4 tables. [2 refs.]

I. The effects of phenol and merthiolate in mixtures are additive ; mixtures will act on diphtheroids, staphylococci and *Pseudomonas pyocyanea*. The experimental results obtained in testing the bactericidal action of phenol and merthiolate alone and in mixtures of varying concentrations, for various periods and at different temperatures, are presented in tabular and graphic form.

II. Under the experimental conditions described, a 1 : 1,000 aqueous solution of merthiolate was no more effective as an abortive or therapeutic agent in connexion with common colds than was a physiological salt solution.—J. M. R.

I. Stadtler. (1936). Versuch, den gelben Galt mit Ozon zu heilen. [**Attempts to cure Mastitis with Ozone**].—*Z. Fleisch- u. Milchhyg.* **46.** 479-481. [2 refs.]

II. Seelemann, M., & Wolf, C. H. (1936). Weitere Prüfungen verschiedener zum Zwecke der Galtbehandlung empfohlener Heilmittel. [**Tests of New Remedies for Streptococcal Mastitis**].—*Dtsch. tierärztl. Wschr.* **44.** 703-705. [1 ref.]

III. Steck, W. (1936). Zysternal-Behandlung der Milchzysterne, ein neues Verfahren zur Beseitigung der Galtinfektion während der Laktation, im Rahmen der systematischen Galtbekämpfung. [**Treatment of Mastitis by Udder Infusions with " Zysternal "**].—*Schweiz. Arch. Tierheilk.* **78.** 470-474. 1 photograph. [2 refs.]

I. S. describes the beneficial action resulting from the injection of pure ozone into quarters infected with chronic mastitis, but the experimental evidence

in support of this contention is not given. Difficulties are experienced in the preservation of the gas in a pure state and a special apparatus for its preparation is described. No apparent disturbance is produced as the result of injection.

II. The value of two proprietary preparations in the treatment of streptococcus mastitis was tested in a number of chronically infected cases. In none of these did any beneficial results ensue, but injections of " entozon " produced reasonably good results.

III. S. records the successful application of an acridine compound, known as " zysternal ", for the treatment of chronic mastitis. The treatment was applied while the animals were dry ; the infection was eliminated in 75% of the quarters treated and there was no interference with subsequent lactation.—S. J. Edwards.

I. Koch, W. (1936). Neue Erfahrungen über hormonale Sterilitätsbehandlung. [**Hormonal Treatment of Sterility**].—*Dtsch. tierärztl. Wschr.* **44.** 855-857. [3 refs.]

II. Koch, W. (1936). Hormonale Sterilisierung. [**Hormonal Sterilization**]. —*Berl. tierärztl. Wschr.* **52.** 791-792. [2 refs.]

I. A discussion on sterility due to causes other than those related to infection. It has been possible to increase the fertility of mares, bitches and hens by injections of either oestrone or prolan, but it is necessary to administer them over a period. Single doses have little effect since the hormones are rapidly destroyed in the body.

II. The author considers that the production of temporary sterility is advantageous in the treatment of certain diseases and also in fattening animals. There are two ways in which this may be accomplished. The first is to prevent the attachment of the fertilized ovum to the endometrium by neutralizing the action of the corpus luteum. Experiments in mice have shown this to be possible by injections of oestrone. The second method is to prevent the onset of oestrus by producing an active corpus luteum. This may be brought about by injections of prolan, and experiments in cats and bitches have shown that it is possible to prevent pregnancy by this means.—J. A. Nicholson.

POISONS AND POISONING.

I. Great Britain. (1935). **Report of the Poisons Board in regard to the Poisons List and Draft Poisons Rules Prepared in Accordance with the Pharmacy and Poisons Act, 1933.** pp. 62. [5 refs.] London : H.M. Stat. Off. [8vo] [1s.]

II. Wright, J. G. (1935). **Report of the Poisons Board in regard to the Poisons List and Draft Poisons Rules Prepared in Accordance with the Pharmacy and Poisons Act, 1933.**—*Vet. Rec.* **47.** 1183-1188.

III. Wright, J. G. (1936). **The Pathological Effect of Poisons Used for Rodents.** —*Ibid.* **48.** 599-602. [8 refs.]

I. The Poisons Board was established under the Pharmacy and Poisons Act, 1933, for the purpose of preparing a " poisons list " and of making rules for the sale of poisonous substances. Poisons are divided into two classes :- Part I, including those which may only be sold by a qualified chemist, and Part II, those which may be sold by a wider range of traders, etc.

II. A commentary on the report from the veterinary viewpoint. The requirements of the Poisons Rules as affecting veterinary practitioners are given. Poisons in Part I now have to be ordered personally by them.

III. In a lecture to an animal welfare society, W. described the properties and lethal effects on rats of barium carbonate, red squill, phosphorus, strychnine, arsenic, the cyanides and thallium salts.

As, by the new Poisons Rules, none but the first two of these may be sold to the public, the use of the others, except by certain specially authorized persons, has ceased. [Bacteria pathogenic for rats and used as rat poisons are not considered in the Poisons Rules].—J. E.

FRANKE, K. W., & POTTER, VAN R. (1936). **The Ability of Rats to Discriminate between Diets of Varying Degrees of Toxicity.**—*Science.* **83.** 330-332. 1 fig. [9 refs.]

In order to test the supposed power of livestock to detect and thus avoid plants containing selenium, experiments were made on rats which were offered alternative diets, one containing good wheat, and the other " toxic " wheat containing 30 parts per million of Se. Other samples of wheat, toxic in various degrees, were fed to other groups of rats.

The results indicated that, as far as Se is concerned, rats can discriminate between toxic and non-toxic diets.—J. E.

DE GIER, C. J. (1936). Schadelijke gevolgen door het voederen van lijnzaad of lijnmeel aan volwassen paarden en runderen. [**Linseed Poisoning of Horses and Cattle**].—*Tijdschr. Diergeneesk.* **63.** 591-596. [8 refs.] [English, French and German summaries].

de G. speaks of the following symptoms in three horses to which 3 kg. of linseed each per day had been fed :—lameness, painful respiration, red mucous membranes, a low but regular pulse and no fever. Oedema of the dewlap was seen in ten cows. 18·6 mg. HCN was found in 100 g. of linseed : other possible toxic substances were not considered.—M. J. J. HOUTHUIS (ROTTERDAM).

I. SCHOFIELD, F. W. (1933). **Liver Disease of Horses (Big Liver) Caused by the Feeding of Alsike Clover.**—*Circ. Ont. vet. Coll.* No. 52. pp. 4.

II. BOUGHTON, I. B., & HARDY, W. T. (1935). **Mescalbean (Sophora secundiflora) Poisonous for Livestock.**—*Bull. Tex. agric. Exp. Sta.* No. 519. pp. 18. 2 figs., 2 tables. [4 refs.]

I. S. ascribes big liver disease of horses (equine hypertrophic cirrhosis) to the feeding of alsike clover, which grows luxuriantly on heavy clay land. The most notable symptoms are congestion of the conjunctiva, jaundice, dark-coloured urine and loss of weight. On *post-mortem* examination the liver is found to be greatly enlarged.

The disease was reproduced in 12 horses by feeding alsike clover. The only effective method of prevention is clearing the land of alsike clover or feeding the clover in very small amounts along with other food.

II. The leaves of mescalbean have been found to be poisonous for sheep and cattle. Cattle appear to be more susceptible than sheep. The characteristic symptoms in sheep are muscular trembling, a stiff gait and falling following forced exercise. The seeds appear to be less toxic, probably because of the resistance to digestion of the hard outer coat. It was found that the winter leaves were more toxic than the spring ones. The toxic dose of the leaves remained unaltered after prolonged feeding of small amounts of the plant.

It is suggested that supplementary feeding during periods of scarcity will prevent losses from this cause.—G. D. SHEARER.

DOAK, B. W. (1936). **Hydrocyanic Acid (HCN) in White Clover.**—*Rep. Dep. Agric. N.Z. 1935-1936.* p. 52.

The HCN content of high-grade white clover is normally high, but attention is drawn to the fallacy of typing clover according to the HCN content, because of the hourly variation in the HCN in the leaf.—C. S. M. HOPKIRK.

EVANS, W. M. (1936). **Report of Investigations of Cattle Poisoning around Payne Lake, Jefferson County, New York. (Water Bloom Poisoning).**—*Cornell Vet.* **26.** 337-341.

Deaths were reported in cattle feeding on the shores of Payne Lake, in the waters of which there was much growth of algae and protozoa. Giving the water to g. pigs, and the injection of it into them, failed to produce toxic symptoms. Although negative results were obtained by these experiments, E. is of the opinion that death was due to the water, as it is unlikely that the disease was of a bacterial nature.—G. D. SHEARER.

TECHNIQUE.

SCHOOP, G. (1936). Trennung von Anaerobiern und Sauerstoffzehrern im Fortner-Verfahren durch Glasplatte. [**Separation of Anaerobes and Aerobes by the Fortner Glass Plate Method**].—*Zlb. Bakt. I. (Orig.).* **136.** 509-511. 2 figs. [2 refs.]

This article describes a method of cultivating anaerobes in the presence of an aerobe, *Chromobact. prodigiosum*, which exhausts the oxygen and allows the anaerobe to grow. The advantage of the method is that it allows different media to be used for the anaerobe and the aerobe.

The bottom halves of two petri dishes are inoculated with the anaerobe and the aerobe respectively. A glass plate with a hole 1 cm. in diameter in the centre, and 1 mm. wider than the petri dish is then placed over one petri dish and the other is inverted and laid on the top of the glass disc. The glass disc is thus interposed between the two petri dishes, the only communication being through the 1 cm. hole. The edges of the dishes and the disc are sealed with plasticine. —D. L. HUGHES.

BOLLIGER, A. (1936). **The Determination of Haemoglobin as Globin Picrate.**—*Aust. J. exp. Biol. med. Sci.* **14.** 97-99. [4 refs.]

A description of a method of estimating haemoglobin by combining its globin fraction with picric acid and then determining the amount of picric acid utilized. Since globin picrate had been found to contain 25·7% picric acid, it was easy to calculate the haemoglobin after the amount of picric acid utilized had been estimated. Results obtained by this method agreed well with those obtained by the standard gasometric determinations.—W. I. B. BEVERIDGE.

MISCELLANEOUS.

GRAY, D. F. (1936). **A Veterinarian's Notes on the North-West Corner of New South Wales.**—*Aust. vet. J.* **12.** 100-106. 2 figs.

These notes are of a general nature, dealing with means of communication, geological formation, vegetation, rainfall, pastoral holdings, water supplies, animal population (wild and domesticated), etc. The duties of the veterinary officer are

briefly detailed and the article ends with a note on the future prospects of the area. It is stated that the productivity has declined in the past 50 years, due chiefly to overstocking, rabbit invasion, decline in annual rainfall (from 8 inches per annum down to 6 inches per annum) and the incidence of dust storms. Much of the country has been denuded of the natural herbage and trees through these agencies.—H. McL. Gordon.

Duran-Reynals, F. (1936). **The Invasion of the Body by Animal Poisons.**—*Science.* **83.** 286-287. [10 refs.]

When saline extracts of the bodies of poisonous, but not of harmless, arthropods are injected intradermally [presumably into mammals] a bleb forms which rapidly spreads out through the dermis. Snake venom blebs spread even more so – up to 20 times the area of a bleb caused by water or saline. The factor which increases tissue permeability is common to mammalian tissues, *e.g.* (testicle), bacteria (staphylococcus) and to snake and arthropod venoms.—J. E.

OFFICIAL AND OTHER REPORTS.

Ceylon. (1936). **Administration Reports of the Government Veterinary Surgeon for 1935.** [Crawford, M.] pp. 18. Colombo: Ceylon Govt. Press. [8vo] [20 cents].

The headquarters of the Veterinary Department were transferred to Peradeniya in April, 1935, so as to be closer to the Agricultural Department. A branch office was established at Colombo.

Animal Diseases.

Bovine tuberculosis is being controlled energetically by strict measures applied to the few centres where it is known to exist. Haemorrhagic Septicaemia caused 19 deaths in Ratnapura. Piroplasmosis and Anaplasmosis are enzootic and are dangerous to imported European cattle. Rinderpest, which had not been seen during the last half of the previous year, remained absent in 1935. Foot and Mouth Disease was enzootic, involving 1,645 cases and 8 deaths. Rabies increased greatly, 249 brains examined being positive; 85,000 stray dogs were destroyed. Schistosomiasis (nasal) in cattle was discovered in one fresh centre in the Kandy district. Deaths in dairy cows from Plant Poisoning (*Cestrum* sp.) were investigated.

Results of routine laboratory work are given. Half of the report deals with animal husbandry.—J. E.

Holland. (1936). Verslag van den veterinair hoofdinspecteur van de volksgezondheid, belast met het toezicht op de naleving van de vleeschkeuringswet, staatsblad 1919, No. 524, over het jaar 1935. **[Holland: Report of the Veterinary Inspector for Public Health and Meat Inspection for 1935].** [Berger, H. C. L. E.] pp. 114. Numerous tables. [4to].

The report for the year of the administration and statistical results of the state meat inspection services. The following figures are given for animal diseases found. Cysticercosis was found in a total of 5,526 cattle and in 6 sheep. This represents a slight increase over the previous year with a figure of 0·95% of all animals inspected. Echinococcosis was found in 6,303 cattle, in 3,201 equines, in 5,241 pigs, in 692 sheep and 42 goats. This was a definite decrease since last year. Tuberculosis was found in 90,904 cattle, 43 equines, 66,860 pigs, 90 sheep and 38 goats, the percentage infection of adult cattle being 18·6 and pigs 5·7, a slight increase over last year.—J. E.

BOOK REVIEWS.

CALMETTE, A. (1936). L'infection bacillaire et la tuberculose. [**Tuberculosis in Man and Animals**]. pp. viii + 1,024. 70 figs. on 24 plates, numerous tables. [Numerous refs.] Paris: Masson et Cie. [4th Edit.] [4to] [Fr. 175]. [Revised by A. BOQUET and L. NÈGRE].

The fourth edition of Calmette's classical text-book has been revised by BOQUET and NÈGRE in response to a wish expressed by CALMETTE in the last years of his life. Apart from a few details, the original plan has been retained. The order of the chapters has been slightly altered, but there has been no essential change in the arrangement of the book.

Part I includes the chapters dealing with the bacilli – morphology, isolation, culture, differentiation, resistance, chemical composition and nutrition – their modes of infection, localization and pathological anatomy.

Part II comprises a study of the different methods of experimental infection, tuberculosis in animals, especially cattle, and the role of meat and milk in human infection.

Part III deals with defensive reactions of the body, the excretion of tubercle bacilli, diagnostic tuberculin reactions and the physiological action of tuberculin.

Part IV describes the frequency and distribution of tuberculosis, natural immunity, serum therapy, antigen therapy, chemotherapy, and experimental vaccination, with special reference to the BCG vaccine.

The book has undergone considerable expansion since the previous edition nine years ago. Some 200 pages and a considerable number of illustrations have been added. Besides countless small additions, there are certain new chapters, *e.g.*, those on the dissociation of tubercle bacilli, and on the spontaneous infection of g. pigs and rabbits. Other chapters have been greatly extended, such as those on culture, isolation, chemical composition, nutrition, excretion, the physiological action of tuberculin, tuberculin reactions in diagnosis, antibodies, and immunization with BCG vaccine.

There is no other book which covers quite the same ground, and BOQUET and NÈGRE are to be congratulated on the sound and constructive manner in which it has been brought up to date.—A. ROBERTSON.

DOBBERSTEIN, J. (1936). Ernst Joest's Handbuch der speziellen pathologischen Anatomie der Haustiere. II. Band. I. Hälfte. Leber und Gallenwege, Bauchspeicheldrüse. [**Pathological Anatomy of Domestic Animals. Vol. II. Part I. Liver and Pancreas**]. pp. 360. 130 figs. [Numerous refs.] Berlin: Richard Schoetz. [2nd Edit.] [4to] [RM.19.80]. [Edited by Frei, W.]

The first edition of this work was published 17 years ago by JOEST. Since that date, there have been many important advances in pathology, and Professor Dobberstein has set himself the task of incorporating these advances whilst maintaining the size of the book within reasonable bounds, and, at the same time, retaining the features which have given JOEST'S work so high a place in the literature of veterinary pathology. These aims have been realized in the new edition and render it invaluable to all who are interested in comparative pathology.

There is no list of contents or index, but these will presumably be included in the second half of the volume. The subject-matter is arranged in the order usually found in German text-books. At the end of each section is a valuable list of references, including a large proportion of papers published in recent years. As an example of the completeness of this feature, neoplasms of the liver and biliary passages receive 56 references.

It must suffice to mention but a few of the subjects on which valuable work has been done :– cirrhosis, lupinosis, leucaemia, lesions produced by *Brucella abortus*, equine infectious anaemia, etc.

The illustrations are for the most part those of the first edition (103 are by JOEST), but there are a number of excellent new ones, including a few in colour. The first edition illustrations appear much clearer on the better paper of the present edition.

It is hoped that with the assistance of the other collaborators listed on the cover, the remaining volumes will shortly appear. They will bring up to date a very valuable reference work on veterinary pathology, and the whole will serve as a fitting memorial to the memory of one of the greatest of comparative pathologists.

—E. G. WHITE.

OPPERMANN, T., [Professor of Pathology and Director of the Medical Clinic at the Veterinary High School in Hanover, Germany]. Translated by MOHLER, J. R., [M.A., V.M.D., D.Sc., Chief, United States Bureau of Animal Industry], & EICHHORN, A., [D.V.S. Director, Veterinary Department, Lederle Laboratories, Inc., formerly Chief, Pathological Division, United States Bureau of Animal Industry]. (1937). **Malkmus' Clinical Diagnosis of the Internal Diseases of Domestic Animals.** pp. 312. 71 figs., 17 figs. on 1 plate. London : Baillière, Tindall & Cox. [11th Edit.] [8vo] [15s.]

The only previous edition to be translated into English was the fourth, about 30 years ago. It can therefore be imagined that there are marked differences in the new one now in hand. The subject is brought fairly well up to date and a chapter on haematogogy is included.

Some American terms used are confusing to English veterinary readers. The reproduction of the illustrations is disappointing.

As a handy compendium the book can be recommended for students and practitioners.—J. E.

HEGNER, R. W. [Ph.D.] (1936). **College Zoology.** pp. xvi + 742. 497 figs., 3 figs. on 3 plates, 7 tables. London and New York : Macmillan & Co., Ltd. [4th Edit.] [8vo] [15s.]

Five years have elapsed since the appearance of the third edition of this text-book. The fourth edition differs from its predecessor in arrangement. The lengthy chapters of the last edition have now been divided into shorter ones and much has been re-written, so that the book is vastly improved.

The substitution of the grasshopper for the specialized honey bee as the insect type is one of the desirable changes. Morphology, though not ignored, is superficial for examination purposes, for example, we read on p. 518 that " The bones of the [snake's] skull are so arranged that the jaws are extremely mobile " – surely a vague description of the streptostylic condition ! This, however, is no real criticism as most students refer to the established text-books of pure morphology. " College Zoology " can play a valuable, parallel part as it ignores neither function nor the living animal and maintains a breadth of treatment which must appeal to those engaged (and perhaps harassed) by detailed studies. The reviewer is of the opinion that the wider issues of biology are frequently obscured by the necessary, yet overwhelming details required by the examination syllabus. " College Zoology ", while assisting the students' sense of proportion, deserves a wider circulation than that dictated by students' needs. The book is readable, well-arranged and there are numerous well-chosen illustrations. The value of the book would have been considerably enhanced by a more extensive glossary.

—C. HORTON-SMITH.